

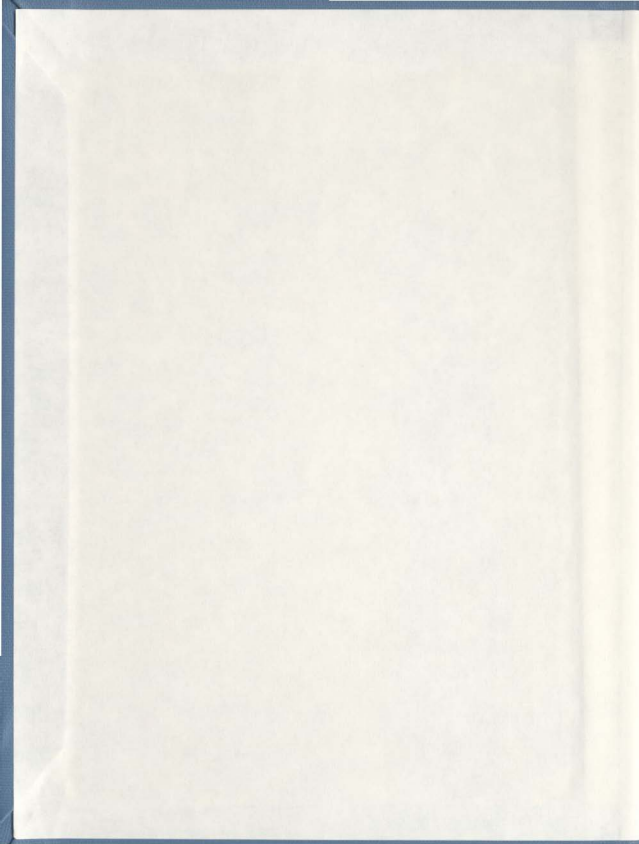
A NURSING INVESTIGATION OF FACTORS IDENTIFIED  
BY NEWFOUNDLAND WOMEN THAT MAY INFLUENCE  
SCREENING FOR CANCER OF THE CERVIX

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COLLEEN M.E. KELLY









A Nursing Investigation of Factors Identified  
by Newfoundland Women  
That May Influence Screening  
for Cancer of the Cervix

by



Colleen M. E. Kelly R. N., B. N.

A thesis submitted to the School of Graduate  
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## Abstract

A descriptive, correlational investigation was conducted in two physicians' clinics in an urban setting in Newfoundland. The investigation sought to document pap smear frequency and identify factors that may influence a woman's decision to have a pap smear. Cancer of the cervix is considered preventable and amenable to successful treatment when detected early. In order to be successful in primary and secondary prevention strategies for this cancer, nurses need to be aware of factors that may influence a woman's decision to have a pap smear according to recommended intervals.

The conceptual framework used in this investigation was the Health Belief Model (HBM). The major elements included: individual perceptions, modifying factors, and likelihood of action. Data were collected using the Pap Test Questionnaire. Ninety-two women comprised the sample population.

The sample consisted of women who were younger and well educated and was not representative of the general population. Most were screened within a five year interval, with two thirds screened less than one year ago. Most of the women of childbearing age were screened less than one year ago as compared to one half of those past childbearing.

The major elements of the HBM were not found to influence screening practice. Only one third of the sample perceived themselves to be susceptible for cancer of the cervix. The

majority reported their husband or boyfriend influenced their decision to have a pap smear. Mother, close friends, and sister were also reported to be influential. The majority believed the recommended screening interval was annually. This has implications for education programs prior to the implementation of the revised screening guidelines which recommend screening every three years regardless of age or risk. Subjects were not knowledgeable of risk factors for cancer of the cervix and of particular concern over two thirds of the youngest age group reported early onset of sexual intercourse was not high risk. Cues to action variables, the doctor and the media, were perceived to be highly influential and greater than that reported for individuals in a woman's family and social network. The majority indicated they should remember when to have a pap smear, yet two thirds indicated the doctor should remind them. Many of the women who had a pap smear less than one year ago were reminded by the doctor. Almost all of the women reported they felt relieved to have a pap smear and that changes would be found early. The barrier most frequently reported was unpleasantness.

The findings of this investigation suggest replication for various subsets of the Newfoundland population including older women, women considered to be disadvantaged, and aboriginal peoples. It is recommended nurses take an active role in prevention activities for cancer of the cervix and offer pap smear screening as a part of Well Womens' Clinics.

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## Table of Contents

Abstract	ii
Acknowledgements	iv
Table of Contents	v
List of Tables	x
List of Figures	xii
Chapter I	
Introduction	1
Problem Statement	11
Significance of the Problem	12
Purpose	13
Research Questions	14
Chapter II	
Literature Review	15
Cancer of the Cervix	15
Epidemiology	15
Risk Factors for Cervical Cancer	18
Age	18
Socioeconomic	18
Sexual history of the woman	19
Parity	20
Sexual history of the male partner	21
Genital infections	22
Chemical factors	24
Summary: Cancer of the Cervix	26

Factors that Influence Screening	27
Individual Perceptions	29
Perceived susceptibility	30
Perceived seriousness	32
Modifying Factors	34
Demographic variables	34
Sociopsychological variables	37
Structural variables	38
Cues to action	40
Likelihood of Action	43
Perceived benefits	43
Perceived barriers	43
Summary: Factors That Influence Screening	48
Conceptual Framework	50
Definition of Terms	53
Chapter III	
Methods and Procedures	57
Design	57
Population and Sample	57
Protection of Subjects' Rights	58
Questionnaire	59
Validity of the Pap Test Questionnaire	61
Pretest and Pilot	61
Data Collection Procedure	63
Data Analysis	66
Descriptive Statistics	66

Inferential Statistics	68
Qualitative Data	69
Chapter IV	
The Results	70
Sample Characteristics	70
Screening Practice	75
Factors that Influence Screening	79
Individual perceptions	79
Perceived susceptibility	79
Perceived seriousness	80
Modifying Factors	82
Demographic variables	82
Sociopsychological variables	82
Structural variables	84
Cues to action	90
Likelihood of Action	92
Perceived benefits	93
Perceived barriers	93
Summary of Results	98
CHAPTER V	
Discussion of the Results	103
Sample Characteristics	103
Screening Practice	108
Factors that Influence Screening	109
Individual Perceptions	109
Perceived susceptibility	109



Perceived seriousness	110
Modifying Factors	110
Demographic variables	111
Sociopsychological variables	111
Structural variables	111
Cues to action	114
Likelihood of Action	116
Perceived benefits	116
Perceived barriers	117
Utility of the Health Belief Model	120
Summary of Discussion of the Results	121
Chapter VI	
Implications and Conclusion	125
Nursing Practice	125
Nursing Theory	128
Nursing Research	130
Conclusion	131
References	133
Appendix A - The Workshop Group: Revised Guidelines for Screening for Cancer of the Cervix	152
Appendix B - Letter of explanation to participants from the investigator	154
Appendix C - Pap Test Questionnaire	155

Appendix D -	Letter of permission to use the questionnaire developed by Hill, Gardner and Rassaby	162
Appendix E -	Letter of permission to use The Health Screening Questionnaire	163
Appendix F -	Method to calculate the Score for Knowledge of Risk Factors for Cancer of the Cervix	164
Appendix G -	Method to calculate emotional factor score	165
Appendix H -	Comparison of groups for normality	166
Appendix I -	T-test and Mann-Whitney U results	170

# List of Tables

Table 1	Age distribution of new cases of CIN and InCC in Newfoundland, 1991	6
Table 2	Estimated age-standardized incidence rates for cancer of the cervix for Canada and the provinces during 1992	17
Table 3	Factor/Category analysis of selected variables on the Pap Test Questionnaire	62
Table 4	Differences between subjects who were able to complete the PTQ prior to the scheduled visit and those who were not	74
Table 5	Characteristics of those who had a pap smear less than one year ago and one or more years ago	76
Table 6	Comparison of women of childbearing age women past childbearing on key variables	78
Table 7	Association between demographic variables and total scores for key variables	81
Table 8	Perceived degree of influence of various sociopsychological variables on women to have a pap smear	83
Table 9	Sociopsychological variables by time of last pap smear	85

Table 10	A comparison between responses for women age 35 years and younger to women over the age of 35 years on recommended screening intervals	87
Table 11	Barriers women reported to screening for cancer of the cervix	95
Table 12	Characteristics of women who reported time pressures prevented them from going for a pap smear	96
Table 13	Reasons women offered for why a pap smear is done	99
Table 14	Comparison of the sample and relevant census tracts for women over the age of 19 years	104

## List of Figures

Figure 1	Schematic representation of changes on the cervix as classified according to the Trad and CIN systems	3
Figure 2	Women screened in Newfoundland by age group during 1989 to 1991	9
Figure 3	The Health Belief Model	51
Figure 4	Characteristics of the sample on demographic variables	71
Figure 5	Comparison between Clinic A and Clinic B	73
Figure 6	Risk factors for cancer of the cervix	88

## CHAPTER I

### Introduction

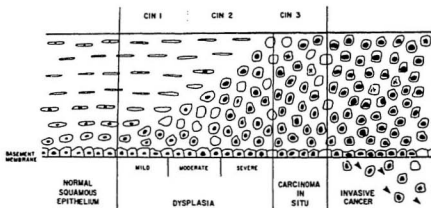
Cancer of the cervix is one of three major cancers of the female reproductive system. Lesions of cancer of the cervix range from early precancerous changes which are nearly always curable, to invasive cancer of the cervix a potentially fatal stage of this disease (Barber, 1986; DiSaia & Creasman, 1989; Khafif, Ralfa & Kopel, 1986; Lovejoy, 1987). Cancer of the cervix is linked with such risk factors as cigarette smoking (Winkelstein, 1990), oral contraceptive use, and various high risk sexual lifestyle behaviours (Brinton, 1991). This disease is considered to be sexually transmitted (Ginsberg, 1991). Women who have precancerous and early cancerous changes on the cervix are usually asymptomatic and often an abnormal Papanicolaou (pap) smear is the only sign of changes on the cervix (White, 1984). The pap smear is one of the most accurate, effective, and economic screening tools used in cancer detection. This screening tool has proven to be effective in reducing the incidence and mortality rates of cancer of the cervix (Clarke, 1988; DiSaia & Creasman, 1989; Greenwald & Sondik, 1986; Miller et al., 1991; Miller, Lindsay & Hill, 1976; Richart & Barron, 1981; Task Force Reconvened, 1982; The Walton Report, 1976).

Precancerous and cancerous changes of the cervix are

commonly classified according to two well known systems: the traditional system and the Cervical Intraepithelial Neoplasia (CIN) system. Common to both is Invasive Cancer of the Cervix (InCC). A schematic representation of changes as they are classified according to both systems is found in Figure 1. The traditional system identifies two lesions of the cervix: dysplasia and carcinoma in situ (CIS). Dysplasia refers to lesions that involve less than the full thickness of the epithelium and is divided into mild, moderate, and severe degrees of dysplasia. CIS identifies lesions that involve full thickness of the epithelium (Lovejoy, 1987). In the CIN system the term dysplasia has been replaced by the term cervical intraepithelial neoplasia. The CIN system identifies changes of the cervix on a continuum. As Figure 1 shows, CIN 1 refers to the presence of atypical cells involving less than one third of the epithelium, CIN 2 identifies those involving two thirds of the epithelium, and CIN 3 identifies those lesions of full thickness involvement (Nelson, Averette & Richart, 1989). The CIN classification system is now the most commonly accepted system (Dozier, 1987) and is reflected in the discussions of this investigation.

Treatment for CIN is generally curative (DiSaia & Creasman, 1989) and when detected at or before CIN 3, the cure rate is 100 percent (Barber, 1986). Treatments for CIN include conization, endocervical curettage, laser

## CHANGES ON THE CERVIX



**Figure 1.** Schematic representation of changes on the cervix as classified according to the Traditional and CIN systems. (From Novak's Textbook of Gynecology, 11th Ed. by H. Jones, A. Wentz, & L. Burnett, 1988, Baltimore: Williams and Wilkins. Reprinted by permission.



surgery, cauterization, cryosurgery, and hysterectomy (DiSaia & Creasman, 1989; Richart, 1987). Although CIN is curable, a diagnosis of CIN and lengthy follow-up are often very traumatic for the woman who has been diagnosed (Lerman et al., 1991; Lovejoy, 1987; Tamlyn-Leaman & Nugent, 1992).

InCC, common to both classification systems, occurs when malignant cells spread directly into adjacent organs, such as the uterus, vagina, rectum, and bladder. Metastasis to distant parts of the body occurs with invasion through the lymphatic and blood systems (Portlock & Goffinet, 1986). InCC is a serious and life threatening disease and the prognosis depends on a variety of factors such as tumour size, invasion into adjacent structures, and distant metastasis (Khafif et al., 1986; Portlock & Goffinet, 1986; Richart, 1987). The five year relative survival rates for all stages of cancer of the cervix in Ontario during 1978 to 1987 were (a) 86% for women age 34 years and younger, (b) 71% for women ages 35 to 64 years, and (c) 49% for women over the age of 65 years (Clark, 1988). Treatments for InCC include surgery and radiation therapy.

Cancer of the cervix has a slow rate of progression; CIN appears ten to fifteen years before the appearance of InCC. Recently there is evidence of an increase in the incidence of CIN and InCC in teenagers and women in their twenties and thirties (DiSaia & Creasman, 1989). As well, there is evidence which suggests the presence of a rapidly

progressive cancer of the cervix with an in-situ period of less than one year in women under age 35 years (Clark, Naahas et al., 1991; Silcocks & Moss, 1988).

According to Miller et al. (1991) "cervical cancer is still an important cause of morbidity and mortality in Canada, and incidence and mortality rates are no longer declining, especially in younger women" (p. 1304). The estimated incidence rate for cancer of the cervix for the province of Newfoundland during 1993, 14 per 100,000 population, is estimated to be greater than the national rate of 8 per 100,000 population. In this province during 1991, there were 3,007 women diagnosed with CIN, 120 with carcinoma in situ of the cervix (CIS), and 44 with invasive cancer of the cervix (InCC) (National Cancer Institute of Canada, 1992). As Table 1 shows, the majority of cases of CIS (76%) were found in women age 34 years and younger, and InCC (84%) in women age 35 years and older (Newfoundland Cancer Treatment and Research Foundation, 1992). The estimated deaths from InCC in Newfoundland during 1992 is five (National Cancer Institute of Canada, 1992). Miller et al. (1991) stated "any woman in whom invasive cervical cancer develops, particularly who dies from the disease, represents a failure to the system" (p. 1310). Women who die from InCC are those who have not been screened, poorly screened, or poorly managed.

Through participation in screening programs, that is,

Table 1

Age Distribution of New Cases of CIN and InCC in  
Newfoundland, 1991

Age	Category		
	CIN	CIS	InCC
0-24	1198	30	0
25-34	1007	63	7
35-46	458	19	11
45-54	190	5	7
55-64	39	1	9
65+	25	2	10

Note. From Annual Report April 1991 - March 1992, by The Newfoundland Cancer Treatment and Research Foundation, 1992, St. John's: Author. Adapted by permission.

having a pap smear according to recommended intervals, cancer of the cervix has become a preventable disease (Cashavelly, 1987; Lovejoy, 1987). The screening intervals recommended by the Task Force reconvened by Health and Welfare Canada (1982) state that women between the ages of 18 to 35 years who have had sexual intercourse should be screened every year up to the age of 35 years and, then every five years until the age of 60 years. If a woman or her doctor believes she is at high risk and should be screened more frequently than every five years, then the Task Force recommended that she should not be discouraged from doing so. Recent Canadian guidelines developed by the Workshop Group (Miller et al., 1991) which have not yet been adopted, recommend women aged 18 years and older who have had sexual intercourse enter a screening program. Two pap smears should be done within one year of each other and if both are normal and without significant epithelial abnormality, a pap smear should then be done every three years up to the age of 69 years. The 1991 guidelines are shown in Appendix A and are different only in recommended screening intervals and the age at which a woman can be dropped from screening.

Canada's Health Promotion Survey (Stephens & Graham, 1993) stated that Newfoundland's screening rate of 68% for the three years prior to the survey was lower than all other Canadian provinces with exception of Quebec. The

Newfoundland Cancer Treatment and Research Foundation Report (1992) identified that during 1989 to 1991, the percentage screened by age group varied from 90.4% for women 25 to 29 years of age to 23.4% for women 65 to 69 years (see Figure 2). The percentage of women screened aged 40 years and older, sharply decreased as the age of the group increased. It can be concluded that the group generally screened are those seeking reproductive care, for example, birth control, prenatal care, etc. Women who are not screened are often those past childbearing and are considered to be at greater risk for developing cancer of the cervix (Miller et al., 1991; Stephens & Graham, 1993).

The Report of the National Workshop on Screening for Cancer of the Cervix (Miller et al., 1991) stated that Canadian screening programs are not fully effective because all high risk women are not screened and because of inadequate follow up and treatment of women with abnormal test results. Other factors which affect program effectiveness are improper sampling technique by those collecting the pap smear sample and errors in reading sample results, both of which result in false-negative reports (Koss, 1993). The literature identifies that the percentage rate of false-negative reports vary. Gay, Donaldson, and Goellner (1985) of The Mayo Clinic, in a review of all tissue cases confirming a diagnosis of carcinoma in situ and InCC during a four year period from 1980 to 1983, found a

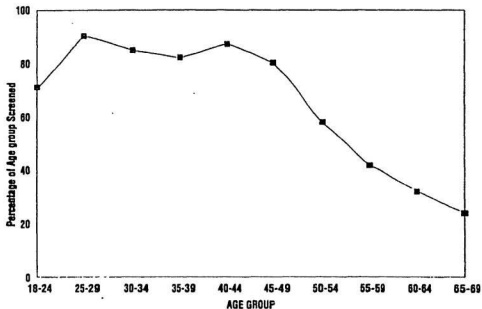


Figure 2. Women Screened in Newfoundland by Age Group During 1989 to 1991. (From The Cancer Registry Report Province of Newfoundland by Newfoundland Cancer Treatment and Research Foundation, 1992, St. John's: Author. Reprinted by permission.)

20% false negative rate. These errors were primarily due to sampling error. In a one year prospective study at St. Joseph's Hospital in London, Ontario, Joseph et al. (1991) found a 11% false negative rate for cervical biopsy specimens, most (90%) of which were due to sampling error. There are no Newfoundland studies identified in the literature that address the false negative rates for this province. In absence of provincial quality assurance programs for this province, it can be concluded that concerns regarding the false negative rate are relevant for Newfoundland. While the false negative rate and the inadequate follow up of women with abnormal smears are serious concerns, neither of these will be addressed in this investigation.

An important question to answer is what factors influence a woman's decision to have a pap smear. Several factors have been identified in a national study by Health and Welfare Canada (1988) which influence a woman's decision to have a pap smear. These include: "one's degree of comfort with the body; feelings of self worth; feelings of vulnerability; a past history of cancer; personal ability to cope with the results of the pap smear; a supportive environment and degree of personal commitment to health" (p. 83). Health and Welfare Canada also stated there was evidence indicating that screening activity was physician initiated or influenced rather than self motivated by

individual women.

In Canada, general practitioners, gynaecologists, and obstetricians are primarily responsible for screening programs for cancer of the cervix. Miller et al., (1991) stated physicians "have tended to rely on the opportunities to initiate screening offered by premarital examinations, antenatal and postnatal care, and prescription of oral contraceptives" (p. 1305). Screening is also offered by both physicians and nurses in family planning clinics, staff health departments, and included by some physicians as part of an annual examination. Miller et al. calls this approach laissez-faire and ineffective as it focuses on "normal-risk women and excludes recent immigrants, native women, and most high risk women, especially those past childbearing age but approaching the age when cervical cancer becomes most common" (p. 1306).

#### Problem Statement

The pap smear is an effective diagnostic test in identifying lesions on the cervix at a precancerous stage. Cancer of the cervix is curable when detected at an early stage and is considered to be a preventable disease. However, women who are considered at high risk may not be screened according to the recommended screening intervals for cancer of the cervix. Women who are most likely not to be screened regularly are those who are past childbearing;



women who are over the age of 40 years. In Newfoundland, the primary source for pap smear screening is through a physician visit. It has been suggested that in many cases women are not initiating screening but are screened only if they happen to be in contact with their physician. It is important then to identify the factors that may influence women to have a pap smear done according to recommended screening intervals.

#### Significance of the Problem

Nurses have a key role to play in disease prevention. This is especially true for cancer of the cervix which is considered preventable and amenable to successful treatment in the early stages (Love & Olsen, 1985; Nevidjon, 1986; White, 1986a; White, 1986b). There are three levels of disease prevention: primary, secondary, and tertiary. According to Edelman and Mandle (1990) "each level of prevention occurs at a distinct point in the development of the disease process and requires specific nursing interventions" (p. 9). Primary prevention targets healthy individuals prior to the development of disease and includes both health promotion and specific protection activities. Edelman and Mandle also stated "health education about screening comes under the rubric primary prevention" (p. 157). Secondary prevention includes early diagnosis and treatment as well as limiting disability of the disease.

According to Kern (1986) secondary prevention "occurs when there is intervention after a pathological process has been initiated but before symptoms occur" (p. 14). Tertiary prevention refers to the process of restoration and rehabilitation after the diagnosis and or treatment of a disease. This investigation will address primary and secondary prevention activities of the nurse in the prevention of cancer of the cervix.

Disease prevention activities of the nurse include taking an active role in educating women about cancer of the cervix, the importance of early detection, the recommended screening intervals, encouraging healthy lifestyle behaviours, especially low risk sexual lifestyle behaviours to adolescents and young women (Cashavelly, 1987; Love & Olsen, 1985; Lovejoy, 1987). It would also include encouraging screening according to recommended intervals, assessment of women at risk, and subsequent counselling (Frank-Stromborg, 1986; Nevidjon, 1986; White, 1986a; White, 1986b). Nurses who are trained to do pap smear testing can offer testing as part of health services: for example, well women's programs offered by public health nurses, or during a health assessment by an occupational health nurse, etc. In order to be successful in disease prevention activities, nurses need to be aware of those factors that may influence women to be screened according to recommended intervals for cancer of the cervix.

### Purpose

The purpose of this investigation is to describe a convenience sample of women in Newfoundland who attend urban family physician clinics and to identify factors that may influence these women to follow recommended screening intervals for early detection of cancer of the cervix.

### Research Questions

This investigation will examine the following questions:

1. What are the characteristics of a group of Newfoundland women who attend urban family physician clinics?
2. Do these women have pap smears done regularly?
3. What are the factors that may influence the decision of these women to have a pap smear done regularly?

## CHAPTER II

### Literature Review

The review of the literature was completed on the following two major topics which are discussed in this chapter: (a) cancer of the cervix, including epidemiology and risk factors for developing this disease; and (b) factors that influence women to be screened for cancer of the cervix.

#### Cancer of the Cervix

There are two histological types of cancer of the cervix: squamous cell which accounts for ninety percent of the cases, and adenocarcinoma (White, 1984). This investigation has as its focus squamous cell cancer of the cervix.

#### Epidemiology

A slow progression of squamous cell cancer of the cervix is evident in the appearance of preinvasive disease (CIN) ten to fifteen years before the appearance of invasive cancer of the cervix (InCC). Rates for cancer of the cervix vary among countries. Racial differences are also found. For example, in certain areas of the United States the incidence for cancer of the cervix is higher for blacks than for whites. The literature also shows that rates can vary between specific areas within a particular country (Muir, Waterhouse, Mack, Powell & Whelan, 1987).

In Canada, the incidence and mortality rates for InCC have shown an overall rate of decline by 4% each year since 1970 with a levelling off since 1980 for all age groups, except for the incidence rates for women between 25 to 44 years which have increased (Gaudette & Hill, 1990). According to Gaudette and Hill, this could be an artifact or it could be related to high risk behaviours such as early age at onset of intercourse and multiple partners.

In Canada, the highest incidence of dysplasia is found in women in their twenties, CIS in women in their thirties, and InCC in women over the age of 40 years (The Walton Report, 1976). There is evidence to indicate that the incidence of CIN and InCC are increasing in teenagers and women in their twenties and thirties (DiSaia & Creasman, 1989). Silcocks and Moss (1988) also believe there is evidence to suggest the presence of a rapidly progressive cancer of the cervix with an in-situ period of less than one year in some women under age 35 years.

The National Cancer Institute of Canada (1992) estimated that during 1992 the incidence rates for InCC in the province of Newfoundland would be 14 per 100,000 population. This rate would be higher than the national rate of 8 per 100,000 population (see Table 2).

The highest incidence rates for InCC in Canada are found in the aboriginal people. Cancer of the cervix is the leading cause of cancer death in Inuit women, falling second

Table 2

Estimated age-standardized incidence rates for cancer of the cervix for Canada and the provinces during 1992.

<hr/> National		
	Provincial	Rate per 100,000
<hr/>		
Canada		8
	Newfoundland	14
	Prince Edward Island	11
	Saskatchewan	11
	Nova Scotia	10
	Alberta	9
	New Brunswick	8
	Ontario	8
	Manitoba	8
	British Columbia	6
	Quebec	4
<hr/>		

Note. From Canadian Cancer Statistics 1992, by The National Cancer Institute of Canada, 1992, Toronto, Ontario: Author. Reprinted by permission.

behind lung cancer (Gaudette, Makomaski Illing & Hill, 1991). According to Census Canada (1993) there are a total of 2,655 females of all ages in Newfoundland who have aboriginal origins. Of this number 1,355 are Inuit, 175 are Metis, and 1,125 are North American Indian. The numbers of aboriginal peoples are very small in this province and this number would therefore not contribute greatly to the Newfoundland rate. There is no way of determining cancer rates in this population since the Newfoundland Cancer Treatment and Research Foundation Reports include aboriginal peoples within the rates for the general population.

#### Risk Factors for Cervical Cancer

The most commonly cited risk factors associated with squamous cell cancer of the cervix include (a) age, (b) socioeconomic status, (b) sexual history of the woman, (c) parity, (d) sexual history of the male partner, (e) genital infections, and (f) chemical factors.

Age. Age is associated with risk for cancer of the cervix. As mentioned earlier, the frequency of screening decreases as age increases in spite of the fact that the greatest numbers of InCC are found in women over the age of 35 years.

Socioeconomic. Low socioeconomic status has been identified in the literature as a high risk factor (DiSaia & Creasman, 1989; Jones, Wentz, & Burnett, 1988; Norman, 1986). In a review of the risk factors for cancer of the

cervix (found in the Journal of Chronic Diseases) Brinton and Fraumeni (1986) reported that women in lower socioeconomic classes are at five times higher risk for cancer of the cervix than women in the highest socioeconomic classes. According to Brinton and Fraumeni, further research is needed to determine if this factor is confounded by sexual history and access to medical services. Hakama (1981) believes that socioeconomic class itself is not a factor but rather the onset of sexual intercourse at an early age.

Sexual history of the woman. It is generally recognized that women are at higher risk if they have three or more male sexual partners and begin intercourse before the age of 20 years (Arraiz, Wigle & Mao, 1990; DiSaia & Creasman, 1989; Rubin & Lauver, 1990; Sadeghi, Hsieh & Gunn, 1984). Brinton and Fraumeni (1986) stated that risk increases directly with the number of sexual partners. In a case-control study of 418 women with InCC and 704 controls, strong support was found for multiple sexual partners as a factor in the development of cancer of the cervix (Brinton et al., 1987). Of particular interest were those women who had ten or more partners who were found to have a 2.8 times increased risk as compared to those women who had only one partner. Those women who had sexual intercourse at age 16 or younger had a 2.3 times risk as compared to those who began sexual activity at age 22 years or older. Stephens



and Graham (1993) reported in Canada's Health Promotion Survey that 60% of Canadians had sexual intercourse before the age of 20 years. Barber (1986) stated because the process of metaplasia of the cervix is active during adolescent years, the cervical epithelial cells are particularly sensitive to exposure to possible carcinogens. This is also true of infection with sexually transmitted diseases, such as the human papilloma virus. In Canada, sexually transmitted diseases are a major health concern for the adolescent population (Health and Welfare Canada, 1990). Of particular concern to this province is that Newfoundland adolescents begin sexual activity at a very young age and are more sexually active than teens in other provinces (Beazley, King & Warren, 1988). According to Stephens and Graham (1993), 41% of males and 57% of females between the ages of 15 to 19 years believe that they are not at risk for contracting a sexually transmitted disease. Adolescents often do not take adequate protection against sexually transmitted diseases, i.e., wearing a condom (Health and Welfare Canada, 1990).

Parity. Brinton and Fraumeni (1986) stated that recent studies have shown a relationship between parity and cancer of the cervix. In a case-control study of 528 women diagnosed with InCC compared to 456 controls and 335 women with CIN compared to 262 controls, Parazzini, La Vecchai, Negri, Cecchetti, and Fedele (1989) found that the risk for

InCC increased with the number of live births a woman had. They found a 4.39 times risk for those women who had five or more births as compared to nulliparous women. Brinton, Reeves, Brenes, Herrero, de Britton et al. (1989) in a case-control study of 759 women with a diagnosis of InCC and 1,430 controls which was carried out in four South American countries, found that the number of pregnancies a woman had persisted as a risk factor after adjustment had been made for both socioeconomic and sexual factors. These researchers found that women who had 14 or more pregnancies were at five times more risk for developing cancer of the cervix.

Sexual history of the male partner. The sexual history of the male partner influences a woman's risk for cancer of the cervix (DiSaia & Creasman, 1989; Rubin & Lauver, 1990). Since cancer of the cervix can be considered similarly to a sexually transmitted disease, the number of sexual partners a male has had is equally as important as the number of partners the woman has had in the development of this cancer (Nelson et al., 1989). A case-control study of 204 husbands of women diagnosed with InCC and 485 control husbands whose wives reported having only one lifetime sexual partner, found that a woman's risk increased significantly by the number of sexual partners the male had (Brinton, Reeves, Brenes, Herrero, Galton et al., 1989). This finding is similar to other case-control studies (Buckley, Harris,

Doll, Vessey & Williams, 1981; Zunzunegui, King, Coria & Charlet, 1986). Buckley et al. (1981) reported that men who had 15 or more partners, increased their wives' risk by 7.8 times for developing cancer of the cervix. The role of the male partner is also supported by studies which have shown that wives of men with cancer of the penis are at higher risk (Graham et al., 1979; Smith, Kinlen, White, Adelstein & Fox, 1980) as well as the finding by Kessler (1976) that husbands of women who died with cancer of the cervix placed the subsequent wife at higher risk.

Genital infections. Infections most commonly associated with precancerous lesions are the human papilloma virus (HPV) and the herpes simplex virus-type 2 (HSV-2), both of which are sexually transmitted.

There is a strong association between HPV and squamous cell cancer of the cervix (Syrjanen et al., 1985). The exact cause and effect relationship has not been proven (DiSaia & Creasman, 1989). It is believed HPV infections precede CIN. HPV lesions are commonly referred to as condylomata or warty lesions that can appear in both men and women as oral and pharyngeal papilloma, lower genital tract and anal neoplasms, and precancerous lesions of the cervix and the penis (Jenson, 1989; Lovejoy, 1987; Nelson et al., 1989). HPV infection is believed to be the most common sexually transmitted disease in the United States today (Becker, Stone & Alexander, 1987). It is estimated that 10

to 20 million Americans harbour one or more of the known HPV types (Lorencz, 1989). The Federal, Provincial, Territorial Working Group on Women's Health (1990) indicated that 30% of North American women have a HPV infection. While data specific to HPV infection in Canada are not available, it is not expected that Canada would differ substantially from these estimates.

To date there are over 56 identified HPV types. Those associated with CIN include: types 6 and 11 which are thought to be low risk virus types, types 16 and 18 high risk, and types numbered between 30 and 50, as medium risk. HPV types 16, 18, and 31 are associated with lesions with a high degree of progression and persistence (DiSaia & Creasman, 1989).

In the early 1970's, there was a great deal of focus on the role of herpes simplex virus-type 2 (HSV-2) in the development of CIN. Rawls, Tompkins, and Melnick (1969) suggested three possible relationships between HSV-2 and the development of CIN: (a) the virus acts as a carcinogen or a co-carcinogen; (b) the virus and the neoplasm may be both venereal diseases and independent of each other; and (c) the virus has an affinity for neoplastic tissue and the infection follows the neoplastic change. Brinton and Fraumeni (1986) stated earlier studies on HSV-2 were complicated by many factors. Most investigators today believe this virus does not have a significant role in the

development of CIN (DiSaia & Creasman, 1989). However, recent literature shows a renewed interest in the role of HSV-2. A case-control study of 766 women diagnosed with InCC and 1,532 controls conducted in Latin America, concluded that women who had a positive HSV-2 antibody level were 60% higher at risk for CIN after adjustment for such potential confounders as HPV infection and sexual activity (Hildesheim et al., 1991). In addition, there was evidence to indicate that HSV-2 and HPV-16 and 18 might interact in the development of InCC.

Chemical factors. Several chemical substances have been identified that may increase the risk of developing cancer of the cervix. These include: diethylstilbestrol, the birth control pill, and cigarette smoking.

Diethylstilbestrol (DES) has been identified as a strong risk factor in the development at a very young age of clear cell adenocarcinoma of the vagina (Horwitz et al., 1988). Those who are considered high risk are daughters of women who were given this drug during the first trimester of pregnancy for the purposes of preventing a miscarriage or controlling spontaneous bleeding during pregnancy. DES is also associated with squamous cell atypia (Shingleton & Orr, 1987) and cervical intraepithelial neoplasia (Helmerhorst et al., 1989; Robby et al., 1984).

There has been much research completed on the role of oral contraceptive use and cancer of the cervix. However

according to Brinton (1991) many of the early studies had methodological complexities including an inability to control for potential confounding variables. Brinton does state though that evidence is mounting and a relationship is possible given the fact that contraceptives can induce hyperplasia of the cells of the cervix and cervical cells have been found to have hormone receptors.

A few studies have successfully shown a relationship for oral contraceptive use while accounting for sexual factors (Harris et al., 1980; Swan & Brown, 1981). A World Health Organization (WHO) (1985) multinational case-control study found an odds ratio of 1.28 for women taking oral contraceptives. While this odds ratio is not high, the number of women taking oral contraceptives is high and therefore by numbers alone this low risk factor should be given consideration. A recent case-control study of 479 women with InCC and 789 population controls in five geographic regions of the United States, after approximate adjustment for confounding variables, found a two times greater risk for long time users with risk highest for women who took oral contraceptives containing estrogen (Brinton, Huggins et al., 1986).

Epidemiological studies have shown that cigarette smoking plays a role in the development of cancer of the cervix and that this role is independent of sexual factors (Buckley et al., 1981; Hellberg, Valentin & Nilsson, 1983;

Lyon, Gardner, West, Stanish & Hebertson, 1983). As an independent factor, risk was found to be related to the number of cigarettes smoked and years of smoking (Brinton, Schairer et al., 1986). A case-control study of 480 women with InCC and 709 population controls by Brinton, Schairer et al. found that risk was increased two times if women smoked forty or more cigarettes each day or smoked for forty or more years. The causal relationship between cigarette smoking and CIN is unknown (Brinton & Fraumeni, 1986). Preliminary research however has been completed with a focus on measuring constituents of cigarette smoke in preparation for further epidemiological based studies (Schiffman et al., 1987). Winkelstein (1990) believes that since the evidence to support the role of cigarette smoking is strong, cancer of the cervix should be officially recognized as a smoking related disease.

#### Summary: Cancer of the Cervix

In summary, the estimated incidence rates of cancer of the cervix for Newfoundland during 1992 were the highest of all the Canadian provinces and greater than the national average. The literature review identified several factors associated with increased risk for squamous cell cancer of the cervix. Two demographic factors of importance include increasing age and low socioeconomic status. Certain sexual lifestyle behaviours have been found to significantly increase a woman's risk; the onset of sexual intercourse

before the age of 20 years and having multiple male partners are directly related to increased risk. Parity is also associated; the higher the parity the higher the degree of risk. The sexual history of a woman's male partner also is associated with a woman's increased risk for cancer of the cervix. Male factors include: multiple sexual partners, a diagnosis of penile cancer, and a previous wife who died of cancer of the cervix. It is believed that sexual factors indicate that cancer of the cervix may be a sexually transmitted type of disease. Various viruses are suggested to play a role: HSV-2 and HPV. A strong association exists for HPV genital infection; it is estimated that 30% of North American women have a HPV infection. Other factors associated with cancer of the cervix include DES ingestion, taking birth control pills which contain estrogen, and smoking.

#### Factors That Influence Screening

The Health Belief Model (HBM) is the most popular model used in research about health behaviour (Ramsay, 1985). It was originally developed in the 1950's as a framework to explain why individuals failed to have various preventive health actions or screening tests done to prevent a particular disease from occurring. One of the preventive actions addressed in earlier studies was screening for cancer of the cervix (Rosenstock, 1974).

In a critical review of 46 prospective and



retrospective studies based on the (HBM) and published between 1974 and 1984, Janz and Becker (1984) concluded there was substantial empirical support for the use of the HBM to explain and predict health behaviour. "Each HBM dimension was found to be significantly associated with the health-related behaviours under study" (p. 41). Significance ratio ordering for each dimension in preventive health behaviour were: barriers (86%), susceptibility (81%), benefits (78%), and severity (65%). This ordering remained unchanged despite the study design of those studies critically reviewed by Janz and Becker.

The HBM has been used in studies investigating the performance of breast self-examination as a prevention behaviour for cancer of the breast (Calnan, 1984; Lashley, 1987; Lauver, 1987; Ramsey, 1985; Rosenstock, 1974). This model has also been used in studies on testicular self-examination for prevention of cancer of the testes (Rudolf & MacEwen Quinn, 1988). With respect to screening for cancer of the cervix, Hill, Gardner, and Rassaby (1985) tested the utility of the HBM, as well as two other health behaviour models in predicting a woman's intention to perform breast self-examination and have a pap smear. These researchers found that the HBM was a significant predictor of intention to have a pap smear.

Because of the HBM's focus on attitudes and beliefs, a limitation is that it neglects to address habitual aspects

of behaviour such as smoking, non health reasons for health behaviour such as dieting to look good, and economic and environmental factors which are beyond the control of the individual, such as working in a hazardous environment (Janz & Becker, 1984; Rosenstock, 1974). Ramsay (1985) believes this model has several shortcomings as it neither gives the significance it should to intention to act nor has feedback loops to show the relationships between various components and how these components affect each other. Ramsay further states that tests of the model have not been strongly supportive due to measurement problems that cause distortions in rates of compliance, methodological problems related to use of volunteers, and low quality research methodology.

A major criticism of the HBM is that it is illness orientated and action specific (Ramsey, 1985; Pender, 1987). Pender proposed modifications to the HBM, some of which include: (a) the addition to individual perceptions of the importance of health to the individual and perceived control over one's health; and (b) the addition to modifying factors of family patterns of health care and interactions with health care professionals. Many of the studies reviewed in the literature showed that researchers used the HBM as the theoretical base but included an additional component believed to be important and absent in the HBM. Components added included for example: social network (Rutledge,

1987), self concept (Hallal, 1982; Rutledge, 1987), locus of control (Hallal, 1982; Sugarek, Deyo & Holmes, 1988), and self care (Rudolf & MacEwen Quinn, 1988).

In spite of the limitations identified, empirical support exists for the ability of the HBM to predict and explain health related behaviours. The factors that may influence a woman's decision to have a pap smear will now be discussed using the major elements of the HBM. These include: (a) individual perceptions, (b) modifying factors, and (c) likelihood of action.

#### Individual Perceptions

The factors which comprise individual perceptions include perceived susceptibility and perceived seriousness. The literature review relevant to the influence of these factors on screening practice follows.

Perceived susceptibility. Perceived susceptibility refers to the degree of risk a woman believes she has for developing cancer of the cervix. Beliefs range on a continuum from denial to high perception of risk for developing cancer of the cervix (Rosenstock, 1974). In a review of 29 retrospective and prospective studies which used the HBM, Janz and Becker (1984) found susceptibility to be highly significant in predicting health related behaviour; significance-ratio ordering ranked susceptibility second (81%) after barriers (89%). The effect was found to be positive; if a woman believed her risk for developing

cancer of the cervix was high, then the likelihood she would have a pap smear done according to recommended screening intervals was also high. Ramsey (1985) in discussions regarding health behaviour and compliance stated that while perceived susceptibility is generally correlated with healthy behaviour, high perceptions of susceptibility may have an affect of inhibiting healthy behaviour. Evidence for this is found in studies regarding participation in dental care, exercise programs, and smoking cessation (Lindsay-Reid & Orbson, 1980; Tash, O'Shea & Cohen, 1969; Weinberger, Greene & Mamlin, 1981; Weisenberg, Kegeles, & Lund, 1980).

In an investigation at an university based family practice clinic in Florida, Schapira et al. (1993) identified screening practices of 201 patients for breast and cervix cancer. Forty-four percent of the women in this study stated they believed they were not susceptible for developing cancer of the cervix. In a random survey of 479 women invited to participate in a mass screening program for cancer of the cervix, Gutteling, Seydel, and Wiegman (1987) found that only 37% of the women believed they were susceptible to developing cancer. Women who feared cancer tended to feel more threatened by the disease and believed their risk to be higher than women who had low levels of fear. These women had high levels of motivational intention to prevent the disease. However, those who had the highest motivational intentions, were those who have average levels

of fear. This therefore suggests that high levels of fear may actually have an inhibiting effect on health behaviour as suggested by Ramsey (1985).

In a retrospective interview of 76 people (68 females and 8 males) who had attended an internal medicine practice in Detroit for a routine health visit, Burack and Liang (1987) found that only 10% identified cancer as a possible future health problem. Eight months prior to the interview, female respondents had been offered an opportunity to have various cancer prevention tests completed, one of which was a pap smear. Sixty-seven percent accepted the invitation for a pap smear and 69% followed through with actually having a pap smear. Perceived susceptibility, in this study, did not appear to influence either acceptance or rejection of having a pap smear.

Sugarek, Deyo, and Holmes (1988) in a randomly selected sample of 101 women attending an internal medicine clinic found that 17% of the sample felt they were susceptible to cancer. This percentage was believed to be very low given that 10% of the total sample reported having had cancer in the past. The investigators concluded that further research was needed to determine the influence of susceptibility on screening behaviour.

Perceived Seriousness. Perceived seriousness refers to a woman's belief regarding the seriousness of cancer of the cervix (Rosenstock, 1974). It is determined by the degree

of emotion aroused by thinking about cancer of the cervix and the problems this cancer could create for the woman (Rosenstock, 1974). Becker and Miaman (1975) stated that as a subjective estimate of the seriousness of a disease, perceived seriousness is very complex and difficult to interpret. Janz and Becker (1984) in their critical review of studies using the HBM, found that perceived seriousness was relatively-low (65%) in predicting health prevention behaviour, but highly significant (88%) for sick role behaviour of individuals who have a particular diagnosed illness.

Cancer is generally viewed as a serious and life threatening disease. Cancer is also seen as an incurable disease (Burack & Liang, 1987). Schapira et al. (1993) questioned their clients about the purpose of the pap smear and found that 51% identified it as a screening test for cancer of the cervix. In a survey of 246 junior high students in Alberta, McGregor, Murphy, and Reeve (1992) found that about three quarters of the adolescents in their study believed cancer was serious; cancer is not amenable to treatment and you can die from it.

The thoughts of having a pap test is stress provoking for some women as they associate it with the possibility of a cancer diagnosis (Lauver, 1987; Wellington Women's Health Research Caucus, 1987). In a follow-up study of 50 women in a low socioeconomic group who had a poor response rate in a

computer based follow-up program, Nathoo (1988) identified that out of 17 women who were interviewed, 12 women believed that the invitation to have a pap smear meant that they had cancer. Millstein, Adler, and Irwin (1984) found that 76% of the adolescents in their study had a fear of finding cancer as a result of having a pap smear.

Some people believe that nothing can be done to prevent cancer from occurring. Harlan, Bernstein, and Kessler (1991) found the women in their study who were less likely to have had a pap smear within three years prior to their study were those who believed there was nothing they could do to reduce their risk of developing cancer.

Belcher (1987) identified that a cancer diagnosis may be perceived as a threat to family integrity and role relationships and this threat is greater for cancer than for any other disease. Belcher also identified that some people still hold stigmas related to cancer: for example, cancer is contagious; cancer is incurable and you will die from it.

#### Modifying Factors

The modifying factors identified in the HBM include: (a) demographic variables, (b) sociopsychological variables, (c) structural variables, and (d) cues to action. Modifying factors affect a woman's predisposition to participate in screening programs for cancer of the cervix. The influence of each of these factors on screening practice follows.

Demographic Factors. The HBM identifies several

demographic variables as modifying factors. Pender (1987) stated that the relationship between demographic variables and the use of preventative services in the absence of signs and symptoms of disease, is less clear than the use of health services in general. The demographic variables found in the literature to have an influence on a woman to have a pap smear test done regularly include: age, education, and socioeconomic status. Each of these demographic variables will be discussed separately.

Norman (1986) in a review of over 600 publications on health related behaviour concluded that age does not appear to be related in a consistent way with health related behaviour. A review of the literature, however suggests a relationship between age and screening practice for cancer of the cervix does exist; as a woman's age increases the frequency of screening decreases (Celentano, Klassen, Weisman & Rosenshein, 1988; Harlan, Bernstein & Kessler, 1991; Hayward, Shapiro, Freeman & Corey, 1988; Makuc, Fried & Kleinman, 1989; Mandelbatt, Gopaul & Wistreich, 1986; Miller et al., 1991; Stephens & Graham, 1993). There is evidence to support the influence of age in the report of the Newfoundland Cancer Treatment and Research Foundation (1992) which indicates from 1989 to 1991, the percentage of the population in various age categories sharply declined as the age increased (i.e., 80% of the women between 45 to 49 years were screened, as compared to 23% of women between the



ages of 65 to 69 years).

Canada's Health Promotion Survey (Stephens & Graham, 1993) concluded that education level was related to the frequency of having a pap smear; highly educated women were more likely to have had a pap smear within the year preceding the survey and women who had never had a pap smear were most likely to have a lower education level. Harlan et al. (1991) in a study which used the results of a national health survey (U.S.) of 12,868 women, found that those below the poverty line were less likely to have had a pap smear within three years prior to the study. They also found that "women with a high school education or less were three times as likely to have never heard of a pap smear" than those who had completed high school. In addition, those who did not complete high school were "more likely to be non-compliant with screening than those who graduated" (p.887). Burack and Liang (1987) found education to be independently associated with acceptance of having a pap smear ( $b = .41$ ,  $p < .03$ ). Other studies also support the influence of education to pap smear screening (Hayward, Shapiro, Freeman & Corey, 1988; Knopf 1976; Knopf, Haran, Eardley & Spencer, 1988; Peters, Bear & Thomas, 1989).

Canada's Health Promotion Survey (Stephens & Graham, 1993) concluded women who were most likely to have never had a pap smear were those from lower income groups. Support for this is also found in a national (U.S.) study completed

by Makuc, Freid, and Kleinman (1989) which investigated changes between 1973 to 1974 and 1985 in the use of preventive health care by women. These investigators found that the percentage of the poor who had a pap test was 10 to 13 percentage points below those not considered poor in all age categories. Hayward et al., (1988) found support for this in a national (U.S.) telephone survey of 4659 women which estimated the adequacy of breast and cervical cancer screening. The investigators found that 72% of women who were considered to be poor, had a pap test within recommended time intervals as compared to 83% of women who were not considered to be poor ( $p < .001$ ). Other studies support the influence of socioeconomic status on screening behaviour for cancer of the cervix (Harlan et al., 1991; Knopf, Haran, et al., 1988; Peters et al., 1989).

Sociopsychological Variables. According to the HBM, sociopsychological variables which influence a woman's perceptions of cancer of the cervix as well as the benefits of having a pap smear include personality, social class, peer and reference group pressure, etc. The discussion which follows will focus on the influence of a woman's family, friends, and peer group.

Hill et al. (1985) in a study of 123 working women who volunteered to participate in a study regarding intentions to have a pap smear and perform breast self examination, found that the subjects believed the people most strongly in

favour of them performing these health behaviours were husband or boyfriend, mother, sister, and close friends. Intention to have a pap smear test correlated significantly for husband or boyfriend ( $r = .22$ ,  $p < .05$ ), mother ( $r = .26$ ,  $p < .01$ ), sister ( $r = .33$ ,  $p < .01$ ), and close friends ( $r = .27$ ,  $p < .01$ ). Those found to have no influence included son, father, brother, and work mates.

Elkind et al. (1988) found similar findings to those of Hill et al. (1985); ten women received positive support from their husband, close friend, or other female family members. However Elkind et al. reported that support did not necessarily translate into action. One woman who participated in Elkind's study stated:

"My daughter, she was very keen on me going for one. She encouraged me to go...I didn't go for the appointment, I went a few days later to make a fresh appointment-but I walked in and walked out again...I don't go to the doctor at all if I can help it...I thought I'm not going to have them mess me about-but I do feel I should have one done because I do suffer a bit of discomfort" (p. 654).

Hill et al. (1985) also supported the belief that intention does not necessarily predict health behaviour.

In their unpublished report, O'Rourke and Jardine (1983) found support for the influence of others in encouraging women to have a pap smear: "many of the women who attended were related, or indicated they were neighbours. Also the students who attended came in twos or threes". One woman in this report stated "my sister dragged me with her".

Structural Variables. The HBM identified such factors

as knowledge of the disease and previous exposure, etc. as relevant structural variables.

Peters et al. (1989) in a population-based case-control study of 200 women under the age of 67 years and who were diagnosed with InCC and their matched controls, identified misunderstanding (lack of understanding of the nature of the pap smear and its preventive role) to be significantly associated with screening behaviour ( $b = -1.338$ ,  $p < .001$ ). Comments made by the women in their study included (a) they were not sick so they did not see a reason to have a pap smear done, (b) the test was not important, and (c) they just didn't get around to having the test done. In logistic regression analysis, misunderstanding was ranked as second in predictive ability behind emotional barriers of fear related to the pap smear ( $b = -.863$ ,  $p < .001$ ). Women therefore with the greatest level of misunderstanding of the pap smear were less likely to have the test. Similar results were found by Harlan et al. (1991); women who were not compliant with a pap smear invitation, believed the pap test was not necessary for them and that they did not have any problems.

Schapira et al. (1993) found that 74% of the women in their study were knowledgeable of recommended screening intervals. Harlan et al. (1991) found that a higher percentage (88%) of the women in their study were knowledgeable of appropriate screening intervals for pap

smear screening. These investigators expected knowledge of proper screening intervals would influence women to have a pap smear, but their results did not support this and concluded that factors other than knowledge were influencing factors.

Burack and Liang found that less than 15% of the women in their study reported spontaneously that the pap smear was an effective method of early cancer detection. The Wellington Women's Research Caucus stated that one area of sensitivity regarding cancer of the cervix is that this disease can be sexually transmitted, a factor which may actually discourage women from screening especially if the woman feels she will be judged. They also concluded that there was a need to educate woman of the importance of the pap smear, recommended intervals, reasons for the test, and risk factors for cancer of the cervix.

Millstein et al. (1984) found that the primary source of information about pelvic exams and pap smears for female adolescents was other female friends; 61% reported the messages they received were negatively focused (i.e., pain, fear, anxiety, etc.). About 40% stated that physicians and their mothers were the another source of information; however, information was not negatively focused and consisted mainly of description of the pap test and the reasons for its importance.

Cues to Action. According to the HBM a cue to action

may come from a variety of sources, both internal and external: a reminder from a friend, a postcard reminder from the physician, an advertisement, reading an article in a magazine, etc. In this province of Newfoundland, there is no computer based reminder system for pap smears, nor is the investigator aware of physician's clinics which offer such a service to their clientele. The two clinics in which this investigation was conducted did not have a formal reminder system. A Canadian study by Battista (1983), conducted in the province of Quebec, showed that 64% of physicians in that province believed that regular screening was the responsibility of the woman herself. However, this study also showed that 36% of the physicians had some form of recall or follow up system.

In the absence of a formal reminder system, the review of the literature identified that the influence of the physician was an important factor to consider in respect to screening for cancer of the cervix. Schapira et al. (1993) reported that physician endorsement of pap smear screening can have a powerful effect on a woman's decision to have a pap smear. Peters et al. (1989) found that physicians generally did not emphasize the importance of the pap smear and this significantly affected (negatively) a woman's screening practice ( $b = -1.160$ ,  $p < .001$ ). Similar conclusions were made by Hill et al. (1985). In a Canadian study, Gerace and Sangster (1986) found that physicians did

not always follow the 1982 Task Force Guidelines for screening for cancer of the cervix and as a result their patients were not screened as recommended.

In Newfoundland, the most readily available material on the importance of pap smears is found in the form of brochures, pamphlets, and posters which are available at no cost upon request from the Department of Health and The Canadian Cancer Society. This material may be found in the offices of public health nurses, physicians, and staff health departments of health care agencies. In addition, this material is sometimes used as a teaching aid in classes which address well women's health. There are no formal media campaigns in this province, for example, television or radio advertisements. Buehler (1983) reporting on the response to a province wide Pap Test Week media campaign, concluded that women, and in particular women in high risk categories were not motivated by the media to have a pap smear. According to Epp (1986) targeted health messages to the public have been very slow in producing change. Valentine (1986) stated that while mass media strategies have the advantage of reaching a large number of people, it does not necessarily mean that individuals will change undesirable lifestyle behaviour as result of seeing an advertisement. In actual fact, "mass communication efforts used to date as a means of changing health behaviour have not been overly successful" (p. 204). The literature

indicates that mass media communications would have greater success if they were combined with personal follow up, small group discussions, for example in schools and agencies, etc. (Fox & Goldsmith, 1976; Valentine, 1986).

#### Likelihood of Action

Likelihood of taking action factors include perceived benefits and perceived barriers to action. The influence of these variables on screening practice follows.

Perceived Benefits. Hill et al. (1985) found positive correlations for intention to have a pap test and the following perceived benefits of having a pap smear (a) cancer would be detected at an early stage ( $r = .29, p < .01$ ); (b) having a pap smear would provide a sense of relief ( $r = .21, p < .01$ ); (c) a pap smear would reassure me about cancer ( $r = .21, p < .01$ ); and (d) cancer would be curable ( $r = .18, p < .05$ ). Elkind, Haran, Eardley, and Spencer (1988), in a follow up study of 125 British women who did not attend a clinic for a pap smear following an invitation six months previously, found similar perceived benefits; 60% of the respondents believed the pap test would detect cancer or any problems at an early stage, they would feel reassured to find nothing wrong, and therefore would have peace of mind.

Perceived Barriers. Hill et al. (1985) found that of all components of the HBM, perceived barriers were the most important and significant in predicting pap test intention ( $r = .57, p < .01$ ). Those perceived barriers found to have



the largest mean pap test barrier scores were forgetting (1.9), embarrassment (1.6), discomfort (1.5), indignity (1.5), and lack of time (1.4). Hill et al. also found that the barrier embarrassment highly correlated with intention to have a pap smear ( $r = -.60$ ,  $p < .05$ ). Other significantly correlated barriers which were found included: physical unpleasantness associated with the pap ( $r = -.37$ ,  $p < .05$ ) and worry about treatments ( $r = -.27$ ,  $p < .05$ ).

Adolescents have been found to have a high degree of anxiety with respect to the pap smear and pelvic exams (Jones, Russo, Dombroski & Lentz, 1984), as well as a high rate of noncompliance in recommended screening follow-up (Russo & Jones, 1984). In a study of 84 female adolescents attending ambulatory physician clinics, Millstein et al. (1984) found that one third (33%) had anxiety levels about the pelvic exam at levels comparable to pretest anxiety levels. The majority (73%) of the teens had a fear that something would be found. Expectations of pain was a concern for two thirds of the adolescents (66%) and those most concerned were teens with the least amount of reported sexual experience ( $r = -.31$ ,  $p = .001$ ). Over half (57%) expressed feelings of embarrassment with undressing; those with less sexual experience were most affected by embarrassment ( $r = -.33$ ,  $p = .001$ ). Almost one half (46%) expressed a concern of personal cleanliness; older adolescents had greater concerns about odour ( $r = .30$ ,

$p = .003$ ). Factor analysis of concerns and anxiety showed that self consciousness (odour, personal cleanliness, and embarrassment about undressing) and potential aversive consequences of having a pap test (pain, pathology, damage to genitals) explained 43% of the variance of the subjects' concerns. Two factors with high loadings were personal cleanliness (0.75) and fear of pain (0.74). The investigators believed these were the two most important factors to address in the adolescent population.

Peters et al. (1989) found fear and hate related to some aspect of the pelvic exam were the most common emotional barriers found in their population of 200 white women over the age of 40 years who had a diagnosis of InCC. The largest component of the variable fear was having to show one's genitals to a stranger (64%), fear of finding something wrong (18%), the attitude of the physician (9%), and fear of pain (10%). Hate as an emotional barrier was related to the wait before the test was done, the insensitive nature of the doctor doing the test, and the pelvic exam itself. Fear was ranked first of all perceived barriers to screening in logistic regression analysis ( $\beta = -.196$ ,  $p < .5$ ). Peters et al. also found fear of having a pap smear to be highly (negative) significant in predicting behaviour ( $\beta = -.863$ ,  $p < .001$ ). In a convenience sample of 63 women between the ages of 20 to 61 years, the Wellington Women's Health Research Caucus (1987) stated that unpleasant

past experiences with the pap smear had a significant impact on a women's acceptance of the test and future screening activity.

Similar findings were made by Teitelbaum et al. (1988) who concluded, following a telephone survey of 1,200 women, that embarrassment, physical discomfort, and fear of what might be found as a result of having a pap smear were major factors which influence screening for cancer of the cervix. The Wellington Women's Health Research Caucus (1987) identified that 75% of the women in their study expressed fear of discomfort, embarrassment, humiliation, and powerlessness in respect to the pap smear. A smaller percentage reported the barriers of fear and discomfort in a study by Schapira et al. (1993), 22% and 32% respectively.

Embarrassment appears to be related to the gender of the person performing the pap smear. The Wellington Women's Health Research Caucus (1987) stated that many women shopped around for a female doctor to do the pap smear. Elkind et al. (1988) found that of the women in their study, 69% preferred a female to do their pap test; none of the woman stated they preferred a male doctor. O'Rourke and Jardine (1983) of the Newfoundland Cancer Treatment and Research Foundation as part of a provincial pap test campaign, surveyed over 1,664 women in the Corner Brook area. Women were located from church groups, hospital staff, women's groups, and businesses. In their unpublished report (cited

with permission), these nurses found the success of their pap smear clinic campaign to be related to the fact that women attending the clinic perceived having a female perform the test to be a "drawing card". It did not matter whether the female performing the pap smear was a nurse or a doctor.

Embarrassment also appears to be related to having one's family doctor perform the pap smear (Elkind et al., 1988; O'Rourke & Jardine, 1983). One woman in the study by O'Rourke and Jardine stated: "My family doctor is as good as gold, but I know him socially. It's so embarrassing for him to have to do a pap smear" (p. 3).

Barriers other than fear and hate which have been identified in the literature include time as well as the logistics of arranging and attending an appointment to have a pap smear. Peters et al. (1989) found women were affected by time: i.e., too busy to take time for self, couldn't afford to take time from work, or found the cost of the test too expensive. Barriers regarding the mechanics of arranging to have a pap smear in Peters' study included not having a means of transportation, no available child care, hassle getting an appointment, difficulty remembering to have the test done, and not having a regular doctor or place to go for a pap smear. Forgetting to make an appointment was also found by Elkind et al. (1988) to affect screening practice. Schapira et al. (1993) reported that 34% of the women in their family practice clinic who participated in

their study, stated that they had a poor memory in respect to remembering to have a pap smear.

Summary: Factors that Influence Screening

The Health Belief Model (HBM) has been found to be valuable in predicting and explaining health-related behaviour, for example intention to have a pap smear. The major elements of this model include: individual perceptions, modifying factors, and likelihood of action.

Individuals perceptions include perceived susceptibility and perceived seriousness. Perceived susceptibility has been found in studies using the HBM to be highly predictive of health related behaviour. However, the literature review identified studies which did not support this finding and indicated that further research was required to determine the influence of perceived susceptibility. Perceived seriousness has been found to be very low in predicting health related behaviour, for example having a pap smear, but highly significant for sick role behaviour.

Modifying factors affect a woman's predisposition in respect to health related behaviour. Demographic variables identified to affect screening practice for cancer of the cervix include age, education level, and socioeconomic status. Increasing age, low educational level, and low socioeconomic status are inversely related to frequency of screening. Various sociopsychological variables influence a

woman's decision to have a pap smear: husband or boyfriend, mother, sister, and close friends. However, this influence does not always translate into action. Structural variables believed to influence screening behaviour include understanding of the reason for the pap smear and knowledge of recommended screening intervals.

The HBM states that in order for an individual to take action, there must be a cue to action. The cue may be internal or external and includes for example: a reminder by the physician, an advertisement, etc. The influence of the physician has been found to be significant primarily because of the value people place on the physician's opinion. Mass media strategies in the past have not been found to be of great success in changing health related behaviour. It is proposed that greater success can be achieved through small group discussions, personal follow up, etc.

An individual's likelihood of taking a preventive health action is dependent upon weighing the perceived benefits and perceived barriers to such action. Benefits identified in the literature to having a pap smear include relief to find nothing wrong and reassurance about early cancer detection. Barriers have been found in research using the HBM to be highly predictive of health related behaviour. Barriers to pap smear screening found in the literature include: forgetting to make an appointment,

embarrassment to have the test done, discomfort, indignity, and lack of time.

#### Conceptual Framework

The Health Belief Model (HBM) is the model chosen for this investigation. A major assumption upon which the HBM is based is that most individuals value health and will therefore take action to avoid illness and prevent disease (Rosenstock, 1974). The major elements of the HBM are derived from psychological and behavioral models and as Figure 3 shows they are: (a) individual perceptions which are comprised of perceived susceptibility and perceived severity; (b) modifying factors which include demographic variables, structural variables, sociopsychological variables, perceived threat of the disease, and cues to action; and (c) likelihood of taking action which includes perceived benefits, perceived barriers, and likelihood of taking the recommended preventive health action (Becker et al., 1977; Becker & Maiman, 1975; Janz & Becker, 1984).

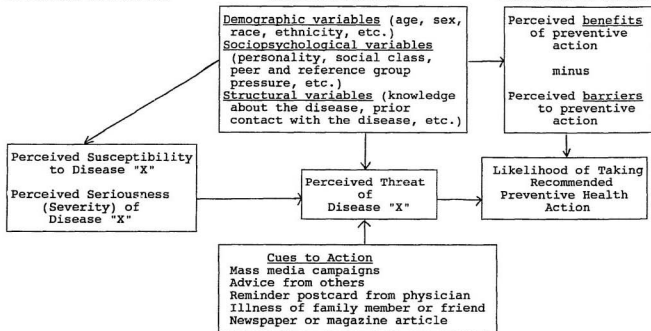
Perceived susceptibility refers to "the subjective risks of contracting a condition" (Rosenstock, 1974, p.3). Perceptions range on a continuum from denial to perceived high degree of risk for developing a particular disease, for example cancer of the cervix. Perceived seriousness refers to "convictions concerning the seriousness of a given health problem" (Rosenstock, 1974, p.3). Seriousness is determined by the degree of emotional arousal generated by thinking

# THE HEALTH BELIEF MODEL

## INDIVIDUAL PERCEPTIONS

## MODIFYING FACTORS

## LIKELIHOOD OF ACTION



**Figure 3.** The Health Belief Model (From "Selected psychosocial models and correlates of individual health-related behaviours" by M. H. Becker et al., 1977, Medical Care, 15(1), p. 28. Copyright 1977 by Medical Care. Reprinted by permission.



about (a) cancer of the cervix and (b) the problems this cancer could create for the woman and her family. According to Rosenstock, both susceptibility and seriousness have a strong cognitive component, which means that a woman would have to have at least minimal knowledge of cancer of the cervix. In combination, perceived susceptibility and perceived seriousness produce a perceived threat of a particular disease and create the force or the energy to take action. The path of action is determined by giving consideration to the perceived benefits of action and weighing these benefits against the perceived barriers to taking action. Perceived benefits are those beliefs a woman holds about the effectiveness of having a pap smear according to recommended intervals in order to reduce the threat of developing cancer of the cervix (e.g., a sense of relief to find nothing wrong). Perceived barriers are either real or perceived beliefs about the negative aspects of taking a particular action. Perceived barriers could include for example fear of pain, embarrassment, etc.

In order for the individual to act, there must be a cue to take action (i.e., a reminder telephone call, an advertisement, etc.). In addition, the HBM states that the likelihood of taking a particular action is indirectly influenced by demographic, sociopsychological, and structural variables. Sociopsychological variables include for example, the pressure of peer and reference groups,

family and friends. Structural variables include for example, knowledge of cancer of cervix and prior exposure to the disease.

Using the HBM to explain screening behaviour for cancer of the cervix, would mean that a woman must believe that (a) she is at risk of developing cancer of the cervix even in absence of symptoms, (b) cancer has serious consequences for some aspect of her life, (c) the benefits of having a pap smear far outweigh any perceived barriers to the test, such as pain or embarrassment, and (d) action is required (Rosenstock, 1974). The HBM is considered by the investigator to be an appropriate conceptual framework for this investigation.

#### Definition of Terms

##### **Individual Perceptions**

A major element in the HBM which refers to an individual's beliefs about perceived susceptibility to a particular disease and the seriousness of that disease (Rosenstock, 1974).

##### **Perceived Susceptibility**

"The subjective risks of contracting a condition" (Rosenstock, 1974, p.3); the degree of risk a woman believes she has for developing cancer of the cervix.

##### **Perceived Seriousness**

"Convictions concerning the seriousness of a given health problem" (Rosenstock, 1974, p.3); perceived

seriousness is measured in this investigation by the subject identifying that the pap smear is a test for cancer detection.

### **Modifying Factors**

A major element in the HBM which identifies those variables that affect individual perceptions and likelihood of action and which include: demographic variables, sociopsychological variables, structural variables, and perceived threat of a particular disease. It also includes cues to action variables (Becker et al., 1977).

### **Demographic Variables**

Demographic variables such as age, race, sex, ethnicity, etc. which serve "to condition both individual perceptions and the perceived benefits of preventive actions" (Rosenstock, 1974, p. 6).

### **Sociopsychological Variables**

Variables such as personality, social class, peer and reference group pressure, etc. which serve "to condition both individual perceptions and the perceived benefits of preventive actions" (Rosenstock, 1974, p. 6). This would include pressure from or the influence of husband/boy friend, mother, sister, close friends, and work mates.

### **Structural Variables**

Factors such as knowledge about a particular disease and prior exposure that serve "to condition both individual perceptions and the perceived benefits of preventive

actions" (Rosenstock, 1974, p. 6). This would include for example: knowledge of recommended screening intervals, the importance of the pap test, where to go for a pap test, and factors which increase the risk of developing this cancer.

#### **Perceived Threat of A Disease**

The combined degree of perceived susceptibility and perceived seriousness to a particular disease (Rosenstock, 1974). Perceived threat of disease is not measured in this investigation.

#### **Cues to Action**

Internal or external factors that serve to trigger an individual to take a certain preventive action, for example, mass media campaigns, someone's advice, a physician's reminder postcard, a friend's illness, or a newspaper article (Rosenstock, 1974).

#### **Likelihood of Action**

A major element in the HBM which refers to an individual's probability of taking action and includes the following factors: perceived benefits, perceived barriers, and likelihood of taking recommended preventive health action (Rosenstock, 1974).

#### **Perceived Benefits**

Beliefs that an individual holds regarding the effectiveness of taking a certain preventive action to reduce the threat of the disease (Rosenstock, 1974), for example having a pap smear, would mean abnormal changes

would be found early or would give a sense of relief to find nothing wrong.

#### **Perceived Barriers**

Real or perceived beliefs about the negative aspects of a particular preventive health action which arouse conflicting motives of avoidance (Rosenstock, 1974). The individual may believe the health action is "inconvenient, expensive, unpleasant, painful, or upsetting" (p. 4).

#### **Likelihood of Taking Recommended Preventive Health Action**

The likelihood of an individual following recommended screening intervals for cancer of the cervix; for women between the ages of 18 to 35 years, having a pap smear annually up to the age of 35 years and thereafter every five years up to the age of 60 years. Women over the age of 35 years who are believed to be high risk may have a pap smear at more frequent intervals (Task Force Reconvened, 1982). Likelihood of taking action will be addressed in this investigation under the heading screening practice.

### CHAPTER III

#### Methods and Procedures

##### Design

This investigation used a descriptive, correlational design to document pap smear frequency and to identify factors believed to influence a woman's decision to have a pap smear. The Pap Test Questionnaire was used to collect data on individual perceptions, modifying factors, and likelihood of action variables as defined by the Health Belief Model. The investigation was conducted in two physicians' clinics in the St. John's metropolitan area. The subjects completed the questionnaire in the waiting areas of the clinics, prior to scheduled appointments with physicians.

##### Population and Sample

The target population was all women over the age of nineteen years who attended physician clinics for any medical reason. The accessible population were women who attended the two participating physicians' clinics in this investigation during the six week data collection period. Ninety-six of the one hundred questionnaires sent to clinics were returned. Four of the returned questionnaires were incomplete and subsequently discarded. The final sample consisted of ninety-two (92) women. All of the participants met the inclusion criteria (a) over 19 years of age, and (b)

willing to complete a questionnaire.

The sample used in this investigation was a convenience, non-probability sample. For this reason the results may not be generalized beyond the subjects included in the investigation.

#### Protection of Subjects' Rights

Permission to conduct the proposed investigation was initially granted by the Human Investigations Committee of Memorial University of Newfoundland. Both participating physicians' clinics granted written permission to conduct the investigation following a review of the proposal. Completion of the questionnaire by the subjects was considered consent to participate in the investigation. Anonymity was ensured by not requesting the participants to provide any potentially identifying information on the questionnaire. There were no anticipated risks for the subjects. The time required to complete the questionnaire, approximately ten to fifteen minutes, was the only inconvenience. As well, all subjects had an opportunity to discuss any concerns about the questionnaire during their visit with the doctor.

The questionnaires were returned to the clinic staff in an envelope attached to the questionnaire which the subjects could seal. The answered questionnaires were seen only by the investigator and were kept in locked storage.

An immediate benefit for the subjects was increased

awareness of cancer of the cervix and the pap smear test. Long range benefits included access to the findings and thereby increased knowledge of cancer of the cervix and factors that may influence a decision to have a regular pap smear. The subjects could access the findings through written request to the investigator. The name and address of the investigator was provided on the letter attached to the questionnaire (see Appendix B).

#### Questionnaire

The Pap Test Questionnaire (PTQ) was mainly comprised of closed ended questions with either preselected responses or a five point Likert rating scale (see Appendix C). Six open ended questions were also included to obtain additional information where necessary (i.e., if "other" was chosen as a response to an item, the respondent was asked to explain the reason for this choice).

The PTQ was developed from the Health Belief Model (HBM), and items adapted with permission from The Health Screening Questionnaire by Sugarek, Deyo, and Holmes (1988), and a self administered questionnaire by Hill et al. (1985). Permission is found in Appendices D and E. The Health Screening Questionnaire (Sugarek et al., 1988) measured the beliefs and attitudes of a multi ethnic population towards breast and cervix cancer screening. This questionnaire was suitable for an interview method of data collection and was not intended for completion by the participant. It was



developed from the HBM and items on Wallston's Multidimensional Health Locus of Control Scale (Wallston & Wallston, 1978). Only HBM items were selected from the Health Screening Questionnaire. The following were revised and added to the PTQ: (a) knowledge of the pap smear and screening intervals; (b) barriers to pap smear screening, for example, fear of what might be found, embarrassment to have the test done, forgetting, etc.; and (c) items relevant to the influence of the physician, for example, preference for a female to do the test.

The questionnaire by Hill et al. (1985) measured the utility of three specific models to identify factors predisposing women to take precautions against breast and cervix cancer: The HBM, The Theory of Reasoned Action, and The Subjective Probability Model. The following items testing the HBM were revised and added to the PTQ: (a) the listing of individuals who may influence a woman to have a pap smear; (b) the benefit to screening, relief to find nothing wrong; and (c) barriers to screening, for example, worry about results, and forgetting to make an appointment.

Content and face validity of the PTQ were enhanced in several ways. Two physicians, expert in the field of pap smear screening, reviewed the questionnaire for content validity. The questionnaire was also reviewed for face validity by a statistician, an expert in questionnaire construction with Statistics Canada, and a research

psychologist. Comments and suggestions resulted in several revisions to the final questionnaire.

#### Validity of The Pap Test Questionnaire

Factor analysis was completed on a total of 23 variables reported as ordinal data on the PTQ. These variables measured knowledge of risk factors for cancer of the cervix, sociopsychological variables, cues to action, and the nine barriers to having a pap smear.

Factor extraction grouped the 23 variables under eight factors or categories which accounted for sixty-six percent of the total variance. Using the rotated factor matrix, the variables were grouped according to those that had large loadings for the same factor or category (see Table 3). All but one loading was greater than 0.5 in absolute value; "difficulty getting a baby sitter" which is acceptable under Factor 5 as a deterrent from having a pap smear done. It can be concluded that the items from the PTQ subjected to factor analysis, are valid measures of the variables as they grouped themselves into categories that were compatible with the HBM.

#### Pretest and Pilot

The questionnaire was pretested on four women approximately two months prior to data collection. The pretest indicated that seven to fifteen minutes were required to complete the PTQ, the questionnaire items were understood, and all questions were answered properly. The

Table 3

Factor/Category Analysis of Selected Variables on the Pap  
Test Questionnaire

<u>Factor/Category and Title</u>	
Variable	(Loading)
1 Structural: Knowledge of Specific Risk Factors	
male partners who had multiple partners	(.79895)
genital infection	(.78981)
genital warts	(.78811)
multiple male partners	(.72928)
sexual intercourse at age 19 & younger	(.66235)
2 Barriers: Fears Related to Having a Pap Smear	
worry until results came back	(.81736)
afraid as I don't know what to expect	(.77589)
afraid of what might be found	(.77271)
3 Sociopsychological: Family/Colleague Influence	
mother	(.79595)
sister	(.78387)
people I work with	(.63875)
4 Barrier: Logistics of Arranging Appointment	
time factors prevent me having a pap	(.82953)
I often forget to make an appointment	(.80263)
5 Barrier: Deterrents from Having a Pap Smear	
The test is unpleasant	(.68408)
My body would not be clean enough	(.65725)
I would be embarrassed	(.63283)
Difficult getting a baby sitter	(.42122)
6 Structural: Knowledge of Non Specific Risk Factors	
smoking	(.59202)
estrogen	(.53432)
7 Cues to Action: Powerful External Others	
doctor	(.77932)
media	(.73751)
8 Sociopsychological: Powerful Significant Others	
close friends	(.80315)
husband/boyfriend	(.63015)

women were asked to comment on the clarity and ease of answering the questions, and to suggest revision. Since there were no difficulties nor suggestions, revisions were not required.

A pilot of the questionnaire was carried out in one of the two participating clinics two weeks prior to data collection. Five women participated in the pilot. Results indicated that there were no apparent difficulties with the data collection process. Minor problems were noted with two questions and changes were made as necessary.

Age categories used for this investigation were not consistent with those used by Statistics Canada. For example, Statistics Canada uses the category 25 to 34 years as compared to 26 to 35 years in the PTQ. This did not present a major problem for comparison. Other limitations of the PTQ included: (a) omission of a question on current employment and economic status, (b) equating single with never married in the item measuring marital status, and (c) omission of a not appropriate category for the item eliciting the influence of the sociopsychological variables.

#### Data Collection Procedure

The decision was made to involve staff personnel in the data collection phase in order to ensure minimal, if any, disruption in the clinics' routine as requested by the physicians. The investigator met a contact person at each clinic prior to data collection to discuss and answer

questions regarding (a) the investigation, (b) role of the contact person, (c) inclusion criteria, (d) participants' right to refuse to be part of the investigation, and (e) method of data collection. The contact person in turn explained the investigation to other clinic personnel. Both clinics were given the name and telephone number of the investigator in the event further explanation or clarification was necessary.

Receptionists were chosen to collect the data because they were the first contact person for each woman upon arriving at the clinic and were familiar to those attending the clinic. It was anticipated that the presence of the researcher in the waiting areas of the clinics could potentially pressure women into completing a questionnaire. Since discussions with the receptionist were a normal part of the noise level in the waiting area, it was assumed that the women would feel more comfortable refusing to participate when asked by the receptionist.

The clinic staff asked women when they arrived for their scheduled appointment if they would be willing to complete a questionnaire on pap smear testing as part of a investigation being carried out by a graduate nursing student. If the woman agreed, she was given a letter explaining the investigation (see Appendix B). When the questionnaire was completed, it was placed in the accompanying envelope by the woman and returned to the

clinic staff before leaving the clinic. Completed questionnaires were placed in a file folder by staff personnel and collected by the investigator on a weekly basis.

All fifty questionnaires in clinic A were returned completed to the investigator during a three week period. The clinic staff reported that there were no refusals to participate in the investigation; two questionnaires were partially completed. Forty-six of the fifty questionnaires in Clinic B were distributed within the time frame set for data collection. Of the forty-six returned questionnaires, two were incomplete. Following consultation, four questionnaires, less than 50% completed, were discarded.

In both clinics, the staff reported that they felt uncomfortable asking women to fill out a questionnaire if a child was with them. In Clinic B, the contact person reported that the staff often forgot to ask women to participate in the investigation.

A major limitation of the data collection procedure is the absence of controls on extraneous variables. For example, there was no way of determining if the physician provided information to women who were unable to complete the questionnaire prior to their appointment. Also the environment in which the questionnaire was completed, the physician's waiting room, may not have been ideal for questionnaire completion.

### Data Analysis

All data were coded and entered into the main frame at Memorial University of Newfoundland. The data analysis was completed following consultation with a statistician. The Statistical Package for the Social Sciences (SPSS-X) (SPSS, 1988) was used to compute descriptive and inferential statistics.

### Descriptive Statistics

Frequencies were obtained on all data. Responses to the items with a five point Likert scale were initially analyzed using all five categories. The responses were subsequently collapsed into three categories.

Average scores were calculated for knowledge of risk factors for cancer of the cervix to elicit an overall knowledge of risk factors score for each respondent. The mean was calculated before collapsing the data into three categories (see Appendix F). Scores were rounded off to the nearest whole number, i.e., scores  $>.5$  were rounded up to the next highest number, and those  $<.5$  were rounded down.

Average scores were also calculated for the emotional barrier items (worry until results come back, fear of not knowing what to expect, afraid of what might be found on the results, embarrassed to have the test, fear body would not be clean enough, and belief the pap smear is unpleasant). This mean score produced a concern score (see Appendix G).

Cross tabulations, using Chi square with a significance

level at .05, were used to determine differences between variables which had nominal responses (e.g., age by does your doctor remind you to have a pap smear). Responses were collapsed where appropriate. For example, the six age categories were collapsed into childbearing (19 to 35 years) and past childbearing (over 35 years). Also, responses on the five point Likert scale were collapsed into three categories where appropriate.

Chi square cross tabulations were also used to determine differences between women "screened less than one year ago" (n = 63) and those "screened one or more years ago" (n = 25) on all variables. One woman who reported she could not remember when her last pap smear was and three women who reported they had never had a pap smear were excluded from these groups.

Finally, chi square cross tabulations were computed to determine associations between demographic variables (age, education, marital status, and number of children) and the total scores for perceived susceptibility, benefits, barriers, knowledge of risk factors, and the influence of family, friends, doctor, and the media. Total scores were calculated for each major category by adding subject's responses (n=92) on the five point Likert scale. For example, items measuring perceived susceptibility ("I am at risk for changes on the cervix" and "I am at risk for cancer of the cervix") were combined to generate a perceived



susceptibility score; the lowest possible score was 2 (the lowest response of 1 on the Likert scale x 2 items) and the highest possible score was 10 (the highest response on the Likert scale 5 x 2 items). Individuals who did not respond to an item, were deleted from calculations of a total perceived susceptibility score. For cross tabulation purposes, the perceived susceptibility scores were categorized according to agree (scores totalling from 2 through 4), uncertain (scores totalling 5 through 7), and disagree (scores totalling 8 through 10). Demographic variables used in cross tabulations were collapsed as follows (a) childbearing (ages 19-35 years) and past childbearing (over 35 years), (b) those with and without children, (c) married or common law, and single, never married, separated, divorced, or widowed, and (d) high school or less, college, trades school or other, and university education.

#### Inferential Statistics

The t-test for independent samples and the Mann-Whitney U (MW) were used to assess the impact of time of last pap smear on knowledge of risk factors for developing cancer of the cervix and emotional barriers to screening. When the assumptions for both the Mann-Whitney U and the t-test were met, the findings for the more robust test, the t-test, are reported. The pooled variance t-test was reported when the following criteria were met: (a) unbiased sample, (b) the

samples were independent, (c) the variables within the sample were independent of each other, and (d) the ratio of group variances was between 0.5 and 2. When normalacy was questionable because of the skewed nature of the distributions (see Appendix H), the MW U was used when the assumptions listed in (a), (b), and (c) were met (Shott, 1990) (see Appendix I).

Tests of differences were also calculated to assess group differences by age for perceived susceptibility, benefits, barriers, knowledge of risk factors, sociopsychological variables, and the cue to action variables; and, to determine if there were differences between subjects who completed or did not complete the PTQ prior to the scheduled appointment with the physician on perceived susceptibility, benefits, barriers, knowledge of risk factors, informal group influence of family and friends, and formal influence of doctor and the media.

#### Qualitative Data

Responses on open ended questions were content analyzed, categorized and tabulated. The categories were developed from common themes in the responses which corresponded with literature findings (Burns & Grove, 1987). This was particularly appropriate for additional responses at the end of the questionnaire, and reasons reported for not having a pap smear done.

## CHAPTER IV

## The Results

The Health Belief Model was used to guide this investigation which sought to identify: (a) pap smear frequency in a convenience sample of women attending two physician's clinics in an urban area, and (b) factors believed to influence a woman's decision to have a pap smear. The results are organized under the following headings: sample characteristics, screening practice, individual perceptions, modifying factors, and likelihood of action.

Sample Characteristics

The age of the participants ranged from 19 to over 65 years (see Figure 4). The mean age was 28 years. Slightly more than 40% of the sample fell into the 26 to 35 years of age range. The majority of the subjects (64%) were either married or in a common law relationship. Thirty-eight percent had not given birth to a child, less than one half (46%) had given birth to 1 to 2 children, and the remainder had 3 to 4 children. Forty-eight percent of the women had a university education. Fifteen of the women (16%) were not educated beyond the high school level.

Forty-eight percent of the subjects were recruited from Clinic A and forty-five from Clinic B. Age represented the key differentiating factor between subjects at the two

## CHARACTERISTICS OF THE SAMPLE

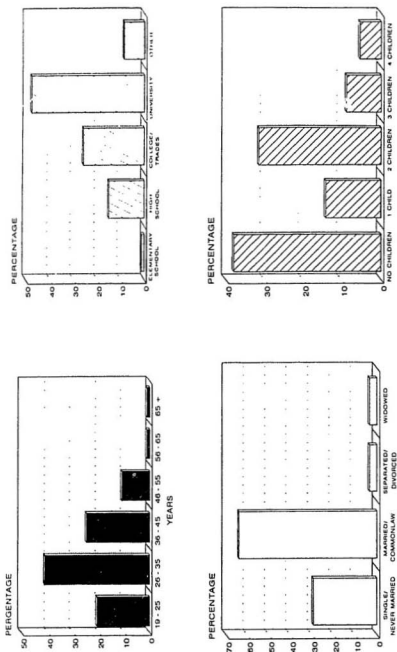
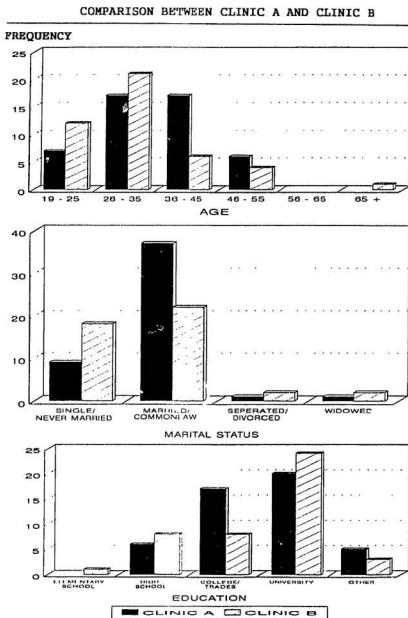


Figure 1. Characteristics of the sample on demographic variables.

clinics. Twenty-three (48%) of the women in Clinic A were over the age of 35 years, versus ten (25%) in Clinic B. Seventy-seven percent in Clinic A were either married or in a common law relationship versus 50% in Clinic B. Twenty women (42%) in Clinic A had a university education as compared to twenty-four (55%) in Clinic B (see Figure 5).

Of the ninety-two women comprising the sample, sixteen (17%) were unable to complete the questionnaire prior to the scheduled appointment. About one half of this number reported that the subject of the questionnaire or the pap smear came up during the appointment. Women who did not complete the questionnaire prior to the scheduled appointment did not differ from the sample population on demographic data. A review of the four incomplete questionnaires showed there were no statistically significant differences between these subjects and the sample population.

The t-test and the Mann-Whitney U were computed to identify differences between subjects who were able to complete their questionnaire prior to their scheduled visit and those who were not. No statistically significant differences were found between the two groups on perceived susceptibility, the structural variables knowledge of risk factors for cancer of the cervix, sociopsychological variables, cues to action variables, perceived benefits, and perceived barriers (see Table 4).



**Figure 5.** Comparison between Clinic A and Clinic B on demographic variables.

Table 4  
Differences Between Subjects Who Were Able to Complete The PTQ  
Prior to The Scheduled Visit and Those Who Were Not

Key Factors	Results	
	Mann-Whitney U	t-test
perceived susceptibility	w = 658.5, p = .99	t = -.16, p = .87
structural: knowledge	w = 562.0, p = .83	t = -.15, p = .88
sociopsychological	w = 494.5, p = .45	t = -.74, p = .46
cue to action	w = 505.0, p = .35	t = -.66, p = .51
perceived benefits	w = 602.0, p = .52	t = .79, p = .44
perceived barriers	w = 639.0, p = .73	t = -.80, p = .43

### Screening Practice

All but three women reported having a pap smear previously. Two were single or never married, between the ages of 19 to 25 years of age, and had scheduled this visit to have their first pap smear. The majority of the sample (87%) reported that their last pap smear was either less than one year ago or 1 to 2 years ago. The remaining responses varied from 2 to 3 years ago to can't remember. The majority of the subjects in the 19 to 35 years category reported their last pap smear was less than one year ago (80%) as compared to 56% over 35 years.

The sample was divided on the basis of time of last pap smear and age for the purpose of determining differences between groups on factors identified to influence regular screening. Upon consultation with experts in the area, the sample was divided into two groups: those who were screened less than one year ago ( $n = 63$ ) and those screened one or more years ago ( $n = 25$ ). Age divisions were described previously. All the women in the sample were screened within the recommended five year interval, with two thirds screened less than one year ago. One identified limitation with the PTQ was the overlapping categories (i.e., "1-2 years ago"; "2-3 years ago"; "3-4 years ago"). If the PTQ is to be used in the future, these response categories should be mutually exclusive.

The most notable difference between the two groups was



Table 5

Characteristics of Those Who Had a Pap Smear Less than One Year Ago (n = 63) and One or More Years Ago (n = 25)

Category	Group	
	< 1 year N (%)	1 or more years N (%)
Age in years		
19 - 25	13 (21)	4 (16)
26 - 35	31 (49)	7 (28)
36 - 45	14 (22)	9 (36)
46 - 55	5 (8)	3 (12)
Over 65		1 (4)
No Response		1 (4)
Education Level		
high school	8 (13)	5 (20)
college/trades	19 (30)	6 (24)
university	30 (48)	12 (48)
other	6 (10)	2 (8)
Marital Status		
single	20 (32)	5 (20)
married/common law	41 (65)	17 (68)
separated/divorced	1 (2)	1 (4)
widowed	1 (2)	2 (8)
Number of Children		
none	26 (41)	7 (28)
1	11 (18)	2 (8)
2	22 (35)	7 (28)
3	2 (3)	6 (24)
4	2 (3)	2 (8)
No Response		1 (4)

on the age variable (See Table 5). This difference was significant [ $\chi^2 (1, N = 87) = 4.3, p .03$ ]. Seventy percent of those who had a pap smear less than one year ago were of child bearing age, whereas, fifty-two percent of those who had a pap smear one or more years ago were past childbearing age. The majority of the sample in both groups were either married or in a common law relationship. About one third (32%) of those who had a pap smear less than one year ago were single or never married compared to 20% of those whose last pap smear was one or more years ago. There were notable differences between the groups on the number of children variable. Forty-one percent of those who had a pap smear than one year ago reported never having a child versus 28% of those whose last pap smear was one or more years ago. The majority of the women in the sample were educated beyond the high school level.

#### Age Variable

The sample was divided into women of childbearing age (35 years or younger) and women past childbearing (over the age of 35 years). The Mann-Whitney U and t-test were computed for perceived susceptibility, benefits, barriers, cue to action variables, knowledge of risk factors for cancer of the cervix, and sociopsychological variables. There were no statistically significant differences between the groups (see Table 6).

Table 6

Comparison Between Women of Childbearing Age and Women Past Childbearing  
on Key Variables

Variable	Mann-Whitney	t-test
perceived susceptibility	w = 1596.0, p = .37	t = -.91, p = .37
structural: knowledge	w = 1031.0, p = .24	t = 1.09, p = .28
sociopsychological	w = 871.0, p = .59	t = 0.53, p = .60
cues to action	w = 1055.5, p = .51	t = -.42, p = .68
perceived benefits	w = 1301.5, p = .46	t = .98, p = .33
perceived barriers	w = 1309.0, p = .46	t = 0.41, p = .68

### Factors that Influence Screening

The discussions in this section will follow the major divisions of the HBM: (a) individual perceptions, (b) modifying factors, and (c) likelihood of taking action.

#### Individual Perceptions

Individual perceptions include perceived susceptibility and perceived seriousness. A woman's subjective state of readiness to have a pap smear done is determined by perceived susceptibility to cancer of the cervix and the perceived seriousness of this cancer.

Perceived Susceptibility. Perceived susceptibility was measured by degree of agreement with the statements: "I am at risk for developing changes on the cervix," and "I am at risk for developing cancer of the cervix". One third of the women (33%) believed they were susceptible for developing cervical changes and cancer of the cervix. The remaining responses were equally dispersed between disagree (33%) and uncertain (34%) for cervical cancer risk, and (30%) and (37%) respectively for susceptibility to developing changes on the cervix. There were no statistically significant differences between the time of last pap smear groups on perceived susceptibility [ $\chi^2 (2, N = 88) = .66, p .71$ ].

Total perceived susceptibility scores were calculated for the entire sample (n=92). Forty-two percent were uncertain about their risk for developing cancer of the cervix, 28% indicated a low susceptibility, and 30% believed

they were highly susceptible. Cross tabulations between total perceived susceptibility scores and demographic variables did not show any statistically significant differences (see Table 7).

Perceived Seriousness. The majority of women (95%) stated they knew why they were encouraged to have a pap smear. Three indicated they did not know why, and two did not respond to this question. Five of the women who either did not know why or failed to respond indicated that the recommended screening interval was either every year (n=3) or every two years (n=2). Three of these women had not completed high school (n=3) or had only an elementary school level of education (n=1).

Of the women who indicated they knew why they were encouraged to have a pap smear, almost two thirds (64%) stated the pap smear was a test for detecting cancer of the cervix. Some of these women offered more than one reason for the pap test, for example:

to test for cervical cancer, as well detect infection, problems, etc...  
it can show signs of cancer of the cervix and maybe other forms of cancer early enough to treat, and STDs [sexually transmitted diseases].

However, the remaining one third (36%) did suggest that the pap smear was done to detect abnormalities, for example:

to detect any abnormal cell growth...  
detects early changes in cell make-up...  
look for various signs of disease...  
to determine if cells at or near the cervix opening are healthy.

Table 7  
Associations Between Demographic Variables and Total Scores for Key Variables

Key Variables	Demographic Variable							
	marital		education		children		age	
	$\chi^2$ (df)	p	$\chi^2$ (df)	p	$\chi^2$ (df)	p	$\chi^2$ (df)	p
Individual Perceptions susceptibility	2.704 (2)	.37	1.40 (4)	.85	0.10 (2)	.62	1.133 (2)	.57
Modifying Factors sociopsychological	0.525 (2)	.77	4.400 (4)	.32	0.58 (2)	.75	0.506 (2)	.78
knowledge/structural	2.466 (1)	.11	2.206 (2)	.33	11.37 (1)	.001	0.050 (1)	.82
cues to action	2.042 (2)	.36	2.761 (4)	.60	0.501 (2)	.78	0.534 (2)	.77
Likelihood of Action								
perceived benefits	1.784 (2)	.41	5.865 (4)	.21	3.767 (2)	.15	3.008 (2)	.22
perceived barriers	1.626 (1)	.20	1.835 (1)	.40	0.189 (1)	.68	1.173 (1)	.78

One woman suggested that the pap smear was necessary when taking the birth control pill: "check for any abnormalities, required when taking the pill".

#### Modifying Factors

The modifying factors, demographic, structural, and sociopsychological variables, have an indirect influence on individual health perceptions and motivation to have a pap smear done. Cues to action are also categorized as modifying factors and they serve to trigger a women to action, that is to have a pap smear done. The findings for each variable follow.

Demographic Variables. The demographic variables were discussed under the section sample characteristics.

Sociopsychological Variables. Table 8 shows the perceived degree of influence of various sociopsychological variables on the decision to have a pap smear. Although, eighty percent indicated that their husbands or boyfriends influenced the decision, only 39% indicated that this influence was high. There was very little difference in the perceived influence of mother, close friend, and sister; 74%, 71%, and 68% respectively. Fifty-nine percent indicated that work colleagues were influential but only 16% considered this influence high. Of particular interest, the majority (82%) of the fifty-seven women who indicated they were either married or living common law stated their partner influenced their decision; one half reported this

Table 8

Perceived Degree of Influence of Various Sociopsychological Variables on Women to Have a Pap Smear

Factors	Certain About Influence			No Influence	Total
	High N (%)	Low N (%)	Total N (%)	N (%)	N (%)
husband/ boyfriend	34 (39)	36 (41)	70 (80)	18 (20)	88 (100)
mother	34 (38)	32 (36)	66 (74)	23 (26)	89 (100)
friends	32 (35)	33 (36)	65 (71)	26 (29)	91 (100)
sister	30 (35)	28 (33)	58 (68)	27 (32)	85 (100)
people you work with	14 (16)	39 (43)	53 (59)	37 (41)	90 (100)



influence to be high.

Tests of differences were computed using time of last pap smear as the independent variable and each sociopsychological variable as the dependent variable. There were no statistically significant differences between the groups on any sociopsychological variable (see Table 9).

Total scores were calculated for sociopsychological variables. Forty-two percent of the sample indicated that there was no overall influence. The remaining 58% indicated that the overall influence was low and 18% indicated the influence was high. Cross tabulations with demographic data showed there were no statistically significant differences (see Table 7 on page 81).

Structural Variables. Items that measured structural variables included: (a) the importance of having a pap smear, (b) recommended screening intervals, (c) who to go to for the pap smear, and (d) risk factors for cervical cancer. All of the subjects (100%) stated a woman her age should have a pap smear. Only two women (2%) stated that the pap smear was not important for a woman her age. On an open ended questionnaire item, five women offered comments which generally indicated that the pap smear was important. These comments included:

I feel all women should have a pap from age 18 to death...  
 Everyone should have a pap test...  
 I believe having a pap test is very important for every woman to have and they should have one done once a year...

Table 9

Sociopsychological Variables By Time of Last Pap Smear

Variable	Mann-Whitney U	t-test
close friends	w = 1084.0, p = .78	t = -.28, p = .78
husband/boyfriend	w = 1128.0, p = .25	t = -1.15, p = .25
mother	w = 1078.5, p = .63	t = -.48, p = .64
sister	w = 882.5, p = .83	t = .24, p = .81
work mates	w = 925.5, p = .22	t = 1.19, p = .22

Every woman should have a pap smear. It's worth it...  
Pap test is important in every woman's life.

Two women stated that more information should be made  
available:

I believe doctor's offices should have information on  
pap smears in the offices...  
More information on this subject should be reported to  
women and men.

The majority of the subjects (80%) stated the  
recommended screening interval was every year. While 89% of  
women between the ages of 19 to 35 years believed the  
recommended screening interval for a woman her age was  
annually, only 61% of those over the age of 35 years  
indicated a similar time interval (see Table 10). Three  
women thought the pap smear should be done every six months.  
It was impossible to determine whether these women were  
previously diagnosed with CIN and treated. If so, the  
recommended interval of every six months may have been  
appropriate for follow up after treatment.

Knowledge of risk factors for cancer of the cervix was  
measured by asking the subjects to rate the following  
factors in terms of perceived degree of risk: beginning  
sexual intercourse at age nineteen or younger, having sexual  
intercourse with more than three male partners, a male  
partner who had sexual intercourse with three or more  
partners, genital warts, genital infections, smoking, and  
estrogen. The results are graphically depicted in Figure 6.  
For all risk factors, with the exception of estrogen,

Table 10

A Comparison Between Responses from Women Age 35 Years and Younger (n = 57) to Women Over the Age of 35 Years (n = 34) on Recommended Screening Intervals

Interval	Group	
	19-35 years N (%)	Over 35 years N (%)
every year	51 (89)	21 (61)
every two years	1 (2)	8 (24)
every three years	1 (2)	2 (6)
when requested by doctor	3 (5)	1 (3)
other (every 6 months)	1 (2)	2 (6)

Note. n = 91; one woman did not report her age.

# RISK FACTORS FOR CANCER OF THE CERVIX

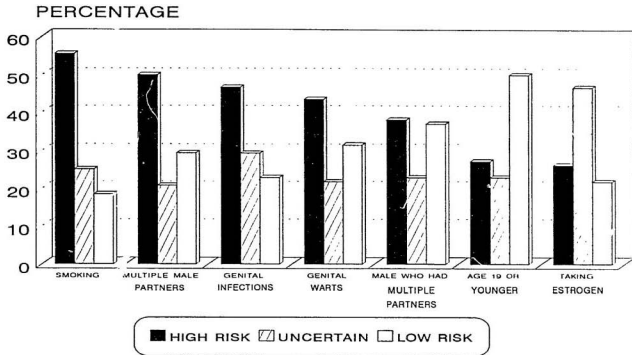


Figure 6. Degree of risk subjects' reported various factors to be for developing cancer of the cervix.

approximately 20% to 30% of the subjects were uncertain about the factors' risk status. The uncertainty factor increased to about 45% for estrogen. When perceived high risk and low risk percentages were compared for each factor, it was found that most women reported smoking (55%), having sexual intercourse with three or more male partners (50%), genital infections (47%), and genital warts (44%) to be high risk factors.

Early onset of sexual intercourse was seen as high risk by only one quarter of the subjects. Approximately two thirds (68%) of the nineteen women 19 to 25 years of age, indicated that initiation of sexual intercourse at an early age was low risk. Sixty-three percent of the sample recognized the importance of regular pap smears as the number of sexual partners increased. When the subjects were divided by time of last pap smear, two of the seven risk factors for cancer of the cervix, evidenced a statistically significant difference: having sexual intercourse with three or more men ( $W = 885.0$ ,  $p = .03$ ) and genital warts ( $W = 833.0$ ,  $p = .05$ ). Sixty percent of those who had their last pap smear less than one year ago indicated that multiple male partners was high risk. This was only true for 28% of those who had a pap smear one or more years ago. Over one half (54%) of who had a pap smear less than one year ago reported genital warts as high risk compared with one quarter (25%) of those screened one or more years ago.

High risk structural variables were combined to generate a general level of knowledge of risk factors for cancer of the cervix. These risk factors included early onset of intercourse, multiple male partners, parity, sexual history of the male partner, genital warts and infections, estrogen, and smoking. Twenty-one women (23%) obtained a mean score of 1, which indicated that the factors as a whole were low risk. Thirty-five (38%) scored a mean of 2, indicating uncertainty, and thirty-six (39%) scored a mean of 3, indicating high risk perceptions.

Total knowledge of risk scores were calculated and cross tabulated with demographic data. A significant difference was found on the variable children: [ $\chi^2$  (1,  $N$  = 78) = 11.371,  $p$  = .001]. The majority of the women (98%) with no children generated an uncertain score when the risk factors were combined. No statistically significant differences were found for the remaining demographic variables (see Table 7 on page 81).

Cues to Action. Cues to action were measured by (a) the degree of influence of the media and the doctor on the decision to have a pap smear, (b) belief that the doctor should remind the woman to have a pap smear, and (c) belief that it was the woman's own responsibility to remember when to have a pap smear.

The majority of the subjects (92%) reported a doctor influenced the decision to have a pap smear. Seventy-eight

percent stated this influence was high and 15% stated it was low. The doctor's influence was greater than that reported for significant others. Sixty percent believed the doctor should remind them to have a pap smear. Even though 87% agreed they were ultimately responsible, 57% reported that their doctor actually did remind them to have a pap smear. A statistically significant difference was found when the sample was split by time of last pap smear [ $\chi^2$  (2,  $N = 88$ ) = 16.2,  $p = .001$ ]. Two thirds (68%) of those who had a pap smear less than one year ago stated the doctor reminded them to have a pap smear. This is in contrast to the one third (33%) who had a pap smear one or more years ago.

Comparing the clinics, over one half (58%) of the subjects in Clinic A saw a female physician as compared to 78% in Clinic B. In Clinic A, one half indicated that their doctor reminded them to have a pap smear, as compared to almost two thirds (63%) in Clinic B. No statistically significant difference was found between the time of last pap smear groups on the variable having a family doctor do the pap smear [ $\chi^2$  (2,  $N = 88$ ) = 4.3,  $p = .11$ ].

Ten women did not go to a family doctor for the pap smear; eight went to a specialist and two to an other physician. The following reasons were given for seeing a specialist:

- hormonal therapy...
- complicated uterus structure...
- ovaries and uterus surgically removed...
- suggested by my doctor.



One woman reported she preferred to go to her obstetrician because "he delivered my children and I feel more comfortable with him".

Eighty percent reported that the media influenced their decision to have a pap smear: this influence was rated either as high (49%) or low (31%). The media influence was rated second to the doctor's influence. Seventeen women identified other factors which influenced their decision to have a pap smear. Seventy percent of the 17 women identified education or personal health concerns as being most influential:

My responsibility for my body...  
 Me. I know the risks...  
 Myself. I think its important...  
 My personal decision, no encouragement or influence necessary.

One woman stated that other people who have had cancer motivated her. A second woman stated taking the birth control pill and multiple partners were motivators.

When the total scores for cues to action variables were calculated, it was discovered that 53% of the women felt that they were strongly influenced by the doctor and the media. When the cues to action variables were cross tabulated with the demographic data, no statistically significant differences were detected (see Table 7 on page 81).

#### Likelihood of Action

Likelihood of action is determined by a woman's

evaluation of the feasibility and the efficacy of having a pap smear done. Perceived benefits are therefore weighted against perceived barriers to having a pap smear. The influence of these variables follows.

Perceived Benefits. Perceived benefits was measured by asking women to indicate their degree of agreement to the following two items: (a) having a pap test done would give me a sense of relief to find nothing wrong and (b) having a pap test would mean that changes would be found at an early stage. The majority of the subjects (96%) indicated they felt relieved after having a pap smear done. One women stated: "I would say there is no excuse to see your doctor. I feel secure when I can ask him things on myself". All but one woman stated she agreed that having a pap smear would mean that changes could be detected early.

Total scores for perceived benefits were calculated on 84 women who responded to both items. The majority (95%) indicated a high degree of perceived benefit for having a pap smear. When perceived benefit variables were cross tabulated with the demographic data, no statistically significant differences were detected (see Table 7 on page 81).

Perceived Barriers. There were nine items on the PTQ which measured barriers to screening: worry until the results come back, fear of not knowing what to expect, afraid of what might be found on the test results,

embarrassed to have the test done, fear that one's body would not be clean enough, belief that the pap smear is unpleasant, difficulty finding a baby sitter, forgetting to make an appointment, and time.

The percentage of women who agreed the items measuring barriers were indeed barriers varied from 64% to 8% (see Table 11). The barrier identified by most women (64%) was that the pap smear was unpleasant. The next two highest rated barriers were worry until the test results came back and fear of what might be found on the results.

Almost one third (31%) agreed that they often forgot to make an appointment for a pap smear. A comparison between the groups by time of last pap smear showed a highly significant difference ( $w = 1500.0$ ,  $p = .001$ ).

Approximately two thirds (64%) of the women who had a pap smear one or more years ago reported they often forgot to make an appointment as compared to 21% of those who had a pap smear less than one year ago.

Time was a barrier for only nineteen women (21%). Table 12 identifies the characteristics of these women. Almost one half (47%) were between the ages of 26 to 35 years, 52% had a university education, less than two thirds (63%) indicated they were married or in a common law relationship, and 42% had no children.

Embarrassment was reported by fifteen women in this investigation to influence a woman's decision to have a pap

Table 11

Barriers Women Reported to Screening for Cancer of the  
Cervix (n=92)

Barrier	Frequency (%)	
the pap smear is unpleasant	59	(64)
afraid of what might be found	30	(33)
worry about results	30	(33)
forget to make an appointment	29	(31)
time prevents me from having a pap smear	19	(21)
embarrassed to have a pap smear	15	(16)
afraid to have a pap smear because I don't know what to expect	14	(15)
difficult finding a baby sitter so I can go for the appointment	8	(9)
afraid my body would not be clean	7	(8)

Table 12

Characteristics of Women Who Reported Time Pressures  
Prevented Them from Going for a Pap Smear (n = 19)

Category	N (%)
<u>Age in years</u>	
19 - 25	4 (21)
26 - 35	9 (47)
36 - 45	4 (21)
46 - 55	1 (5)
over 65	1 (5)
<u>Number of children</u>	
none	8 (42)
1	2 (11)
2	3 (16)
3	4 (21)
4	1 (5)
no response	1 (5)
<u>Marital Status</u>	
single/never married	6 (32)
married/common law	12 (63)
widowed	1 (5)
<u>Education Level</u>	
high school	2 (11)
college/trades school	5 (26)
university	10 (52)
other	2 (11)
<u>Last Pap Smear</u>	
less than one year ago	8 (42)
one or more years ago	10 (53)
no response	1 (5)

smear. The literature reported that embarrassment to be related to the gender of the person performing the test. Five of the fifteen women reporting embarrassment indicated they had a male family doctor: two of these five women chose to go to another doctor for their pap smear.

Total scores for perceived barriers were calculated on the nine items measuring barriers to having a pap smear. Fifty-four (62%) of the subjects indicated a low level of agreement with the barriers as a whole. The remaining thirty-three women (38%) were uncertain if the factors were barriers. No statistically significant differences were detected when the perceived barriers were cross-tabulated with the demographic data (see Table 7 on page 81).

Concern Score for emotional barriers. The following items were combined to determine the degree of concern about having a pap smear: worry until results come back, fear of not knowing what to expect, afraid of what might be found on the test results, embarrassed to have a pap smear, fear body would not be clean enough, and belief the pap smear is unpleasant. Sixty-three women indicated a low degree of concern, sixteen were uncertain, and three indicated a high degree of concern. Two women with high concern had a pap smear less than one year ago, post secondary education, were married, and had two children.

On all barrier items, only two statistically significant differences were found when the sample was

divided by time of last pap smear: afraid my body would not be clean enough ( $t = 2.52$ ,  $p = .01$ ) and time ( $W = 1339.0$ ,  $p = .01$ ). All those who had concerns about cleanliness were screened less than one year ago. Thirteen percent of the women whose last pap smear was less than one year ago agreed time was a factor as compared to 42% of those screened one or more years ago.

Even though all the subjects were screened within the recommended interval of every five years, eighteen cited reasons for not having a pap smear (see Table 13). All but two of these responses are classified as barriers: never had sexual intercourse and complications due to illness.

#### Summary of Results

This chapter outlined the data obtained from ninety-two women who completed a Pap Test Questionnaire while waiting to see their family physician during a previously scheduled appointment at the physicians' clinics. Of the 96 distributed questionnaires, four were discarded because of greater than 50% missing data. The mean age of the subjects was 28 years. The majority of women (84%) had an education beyond high school and almost two thirds (64%) were either married or in a common law relationship.

Most of the sample (96%) was screened within a five year interval, with two thirds screened less than one year ago. The most notable difference between the sample divided by time of last pap smear was age; 70% of childbearing

Table 13

Reasons Offered for Not Having a Pap Smear Done (n = 18)

Category	Frequency
Barriers identified	
uncomfortable	5
embarrassing	3
nervous	1
time	2
forgetfulness	1
Other	
foolish, crazy, stupid	3
lazy	1
don't want to know if you're sick	1
neglect	1
avoidance	1
not taking the pill and doctor	
hasn't asked yet	1
no excuse	1
Not considered barriers	
never had sexual intercourse	1
complications due to illness	1

Note. Some women offered more than one reason. The total will not equal 18.



women had a pap smear less than one year ago as compared to 52% of those who had a pap smear one or more years ago.

Only one third of the women believed they were susceptible to developing changes on the cervix or cancer of the cervix. Perceived seriousness was measured by responses to the item eliciting the reason for the pap smear. Two thirds of the sample reported the reason was detection of cancer and the remainder offered reasons indicative of detecting abnormal changes on the cervix.

The sociopsychological variable reported by 80% of the sample to influence a woman's decision to have a pap smear was their husband or boyfriend; over one third reported this influence to be high. Over two thirds reported their mother, close friends, and sister were influential. The influence of colleagues was reported by 59% of the sample, however, the influence was generally believed to be low.

The majority of the women agreed that the pap smear was important and a woman her age should have a pap smear done. Most of the women (80%) believed the recommended screening interval was annually. For knowledge of risk factors for cancer of the cervix, approximately 20% to 30% of the subjects were uncertain about the factors' risk status, with exception of estrogen for which the uncertainty level rose to 45%. Comparisons between perceived high and low risk perceptions for each factor showed that between 44% and 55% of the sample reported the following as high risk factors:

smoking, multiple male partners, genital inflections, and genital warts. Of particular significance, 66% of the women in the lowest age category indicated that initiation of sexual intercourse at an early age was low risk behaviour. Comparison of the sample divided by time of last pap smear evidenced a statistically significant difference for multiple male partners and genital warts. When the structural variables were combined to generate a general knowledge of risk factors score, only 39% of the sample scored a mean of 3 indicating high risk factor perception.

Cues to action, the doctor and the media, were reported to highly influence a woman's decision to have a pap smear, 92% and 80% respectively. This influence was higher than for those individuals in a woman's family and social network. The doctor's influence was perceived as high by 87% of the sample. Over one half (57%) of the subjects also indicated that the doctor should remind them to have a pap smear even though 87% agreed it was their own responsibility to remember. When the sample was divided by time of last pap smear, a statistically significant difference was found; 68% of those who had a pap smear less than one year ago were reminded by their doctor as compared to 33% of those who had a pap smear one or more years ago.

The perceived benefits for having a pap smear were high. The majority indicated they felt relieved to have a pap smear and that changes would be found early. The most

frequently reported barriers to having a pap smear were: unpleasantness of the pap smear (64%), worry until results come back (33%), and fear of what might be found (33%). Almost one third agreed they often forget to make an appointment to have a pap smear. There was a statistically significant difference for forgetting to make an appointment when the sample was divided by time of last pap smear; 64% of the women who often forgot, had a pap smear one or more years ago as compared to 21% of those who had a pap smear less than one year ago. Total scores for perceived barriers showed that overall women indicated the barriers were either low (62%) in their influence or they were uncertain (38%) of their influence. The six emotional barriers which were combined to produce a concern score showed that only three women had a high degree of concern for having a pap smear done.

## CHAPTER V

## Discussion of the Results

The research questions which guided this investigation were posed to (a) identify the characteristics of Newfoundland women who attended urban family physician clinics, (b) determine if women attending these clinics were screened regularly for cancer of the cervix, and (c) identify the factors that may influence a woman's decision to have a pap smear. The HBM will be used to interpret the findings with respect to the research questions. The following sections will be used to guide the discussion: (a) characteristics of the sample, (b) screening practice, and (c) factors that may influence screening.

Sample Characteristics

The mean age of the sample was 28 years. A comparison was made between the numbers of women in each of the various age categories in the sample to those in the Statistics Canada (1986) census tracts which included Clinic A and Clinic B. The comparison showed the sample was not entirely representative of the general population. For example, as Table 14 shows over one half (59%) of the number of women in the St. John's and Metropolitan area are over the age of 35 years, as compared to over one third (37%) in the sample. Twenty-one percent of the women in the census were over the age of 55 years compared to 1% in the sample.

Table 14

Comparison of the Sample and the Relevant Census Tracts for  
Women over 19 Years of Age

Sample (n = 91)		Census (n = 2020)	
N (%)		N (%)	
Age Category		Age Category	
19-25	19 (21)	20-24	270 (13)
26-35	38 (42)	25-34	575 (28)
36-45	23 (25)	35-44	485 (25)
46-55	10 (11)	45-54	270 (13)
56-65	0 (0)	55-64	200 (10)
over 65	1 (1)	over 65	220 (11)

(no response = 1 in sample)

Note. Census group refers to the numbers reported in the Statistics Canada, 1986, Census Tracts for St. John's: Part 1, (p. 2-7), Ottawa: Author.

As discussed previously, the classifications of age for the sample differed slightly from the Statistics Canada Census report. Although some caution must be taken in making comparisons, the differences in age categories are not felt to be a problem.

Initial consultation with a statistician suggested that a quota type sample should be used to ensure that women of all ages were included. The receptionists would first determine the age of the woman from her chart at the time she presented herself for a scheduled appointment. However, this approach could not be taken as information on the record, including age, was considered by the physicians to be confidential. The sampling method used therefore, was convenience in nature and representative of those women attending the physician's clinics over a set period of time. While this method has merit in describing the women who attend physicians' clinics, it was not ideal for collecting a sample including women of all ages. In respect to the site of sample selection, one could assume that because of contact with a physician the sample would include women who are screened. However this sampling method has merit in describing the factors that may influence the decision of women who attend urban physicians' clinics to have a pap smear, one of which is the influence of the physician. Other sampling methods could have been used with a focus on a broader population base and on women not seeking health

services, for example a random telephone survey or a convenience sample from women in an urban mall setting. However, as a beginning point, there was merit in describing the pap smear screening practice in physicians' clinics. Other sample populations could have focused primarily on those women considered greater at risk for cancer of the cervix, women who are past childbearing.

The subjects in the sample were generally well educated; only 15% had a high school education level or less. Education level has been found to be related to frequency of having a pap smear; those with lower education, high school or less, are most likely not to comply with screening guidelines or not have a pap smear (Harlan et al., 1991; Stephens & Graham, 1993). Since almost all the women in this investigation had a pap smear within the recommended intervals, it can be assumed that the high level of education may have influenced this behaviour.

Socioeconomic status influences screening behaviour; women from lower socioeconomic groups are most likely to never have had a pap smear (Makuk et al., 1989; Stephens & Graham, 1993). The questionnaire used in this investigation did not elicit information on employment or economic status. This should be addressed in future revisions to the PTQ. The Statistics Canada (1986) census tracts which included Clinic A and Clinic B, identified the average income for working women to be low, from \$17,693 to \$18,623 annually.

The average income for households, however was much higher at \$54,000 annually. In absence of data to identify the economic status of the subjects, it is difficult to reach a conclusion regarding the influence of this variable on screening.

In both clinics the physicians were young and did not have long standing practices. As well patients were reported by the clinic staff to be mainly young childbearing families. Clinic B reported that because they were located near the university, many of their patients were young female university students. This may account for age differences between Clinic A and Clinic B as depicted in Figure 5. Both clinics reported "very few older women come to our clinic". Both these clinics were initially chosen because they had male and female physicians, were located in two different areas of the city, and were easily accessible.

An attempt was made to identify bias which may have been unknowingly introduced by the receptionists in both clinics. All women may not have been asked to complete a questionnaire including women over the age of 55 years. The staff of both clinics were asked specifically about this and both reported this was not the case. However, the staff of both clinics reported they felt uncomfortable asking the women to complete a questionnaire if they had children with them.

Sixteen women (17%) were unable to complete their



questionnaire prior to their visit with the physician. Of this number, seven women reported the subject of the questionnaire or the pap smear was brought up by either themselves or the physician during their scheduled appointment. There was no way to control for this external influence and the effect on the subjects can not be determined. These women may have been influenced in their responses as a result of their discussion with the physician. However, because no notable differences were found between these women and the sample as a whole, it can be assumed that this influence may not have been great.

In summary, the sample was comprised mainly of young, well educated women and therefore not representative of the population identified in the census tract for the areas where the clinics were located. Alternative sampling methods should be considered if the investigation is to be repeated so that women of all ages are included and women who are not screened according to recommended intervals are represented. The areas of difficulty with the PTQ should be addressed: age categories and items measuring socioeconomic status.

#### Screening Practice

The majority of the women (88%) in this investigation who had a pap smear, reported their last pap smear was within the recommended screening intervals. Of the remainder, one woman (3%) reported she could not remember

when her last pap smear was and two women indicated more than 4 years ago. This finding is expected when one considers the influence of the average age and educational level of the sample; women of childbearing age and who are well educated are most likely to be screened according to recommended intervals.

A comparison between women of childbearing age and those past childbearing showed the majority (77%) of women of childbearing age had their last pap smear less than one year ago as compared to 48% of those past childbearing. This may be reflective of the finding that women of childbearing age are those who most frequently seek reproductive health care. This activity provides an opportunity for physicians to initiate pap smear screening (The Workshop Group, 1991).

#### Factors That Influence Screening

The discussion of the findings will be presented under the major elements defined by the HBM: (a) individual perceptions which includes perceived susceptibility and perceived seriousness, (b) modifying factors which include demographic variables, sociopsychological variables, structural variables, and cues to action, and (c) likelihood of action variables which include perceived benefits and perceived barriers.

#### Individual Perceptions

Perceived susceptibility and perceived seriousness were

not found in this investigation to influence screening practice.

Perceived susceptibility. One third of the women in this investigation perceived themselves to be susceptible for developing cancer of the cervix. This finding is higher than studies on screening for cancer of the cervix by Sugarek, Deyo, and Holmes (1988) and Burack and Liang (1987) who found that only 17% and 19% respectively of the women in their studies perceived themselves to be susceptible. Janz and Becker (1984) found that susceptibility was highly significant in predicting health related behaviour. This can not be concluded from this investigation given that only one third perceived they were susceptible to cancer of the cervix and the majority of the women were screened within recommended intervals.

Perceived seriousness. Almost two thirds of the sample were aware that the pap smear was a screening tool for cancer of the cervix. Of the remaining women, all indicated reasons which suggested detection of abnormalities or unhealthy cells. These stated reasons can be considered to indirectly identify precancerous or cancerous changes. There were no items on the PTQ that measured the perceived seriousness of a diagnosis of cancer of the cervix nor the effect such a diagnosis would have on the woman's life. Prior to future use of the PTQ such items which measure perceived seriousness should be added to the PTQ. It can be

assumed, however, that because the majority of women were screened within recommended screening, levels that perceived seriousness did not necessarily influence screening in this investigation.

#### Modifying Factors

Various modifying factors were found to influence screening practice of women in this investigation.

Demographic variables. The discussion of the various demographic variables was presented under sample characteristics.

Sociopsychological variables. The husband or boyfriend was reported by the majority of the sample (80%) to be influential, and 39% reported this influence was high. There was very little difference for the influence of mother, close friends, and sister. Support for the influence of family and peers is found in the studies by Hill et al. (1985) and Elkind et al. (1988). Of particular interest, 82% of the women in this investigation who reported being married or in a common law relationship, stated their spouse influenced them to have a pap smear completed. Two thirds of the women of childbearing age indicated that close friends were influential. Those found to be the least influential were people women worked with. These findings reinforce the recommendations of Miller et al. (1991) regarding the importance of educating male partners about cancer of the cervix and recommended

screening intervals.

Between 20% to 40% of the subjects reported there was no influence for various sociopsychological variables. This may be attributed to the absence of a not applicable category for each of the variables identified. Future use of the PTQ should include a not applicable category.

Structural variables. The Task Force reconvened by Health and Welfare Canada (1982) recommended that women between the ages of 18 to 35 years who have had sexual intercourse be screened annually up to the age of 35 years and thereafter every five years to the age of 60 years. If a woman or her doctor believe she is at high risk and should be screened more frequently than every five years, then she should not be discouraged from doing so.

All of the women reported they should have a pap smear. Almost all (98%) believed that the pap smear was important for a woman her age. Over three quarters of the sample stated the pap smear should be done every year. This finding has implications for implementation of the new guidelines (Miller et al., 1991) which have not yet been approved. The new guidelines do not support a high risk screening interval but recommend that all women be screened according to the same interval: every three years regardless of age and risk. These guidelines are based on the premise that better use can be made of pap screening programs and that cancer of the cervix is not believed to progress at a

faster rate in high risk women than in others. This has major implications for the education of women and their partners. Instilling confidence in the newly proposed interval may be challenging if women feel a sense of security in annual pap smear screening.

Generally, subjects were not knowledgeable of the risk factors for cancer of the cervix. A significant difference between the groups divided by time of last pap smear was found for two risk factors only: multiple male partners and genital warts. Most of the women who had a pap smear less than one year ago reported these as risk factors. An explanation for this could be that genital warts are associated more so with younger women. As a sexually transmitted disease, the women were aware that sexually transmitted diseases are associated with multiple sexual partners.

A review of the literature indicates that little research has been done in an attempt to determine knowledge of risk factors for cancer of the cervix. This finding has implications for health care professionals assuming responsibility for implementing appropriate primary prevention activities. If people are unaware of high risk behaviours, they are unlikely to take action to reduce their risk of developing cancer of the cervix. This is particularly relevant when one considers that in this investigation all risk factors for cancer of the cervix with

the exception of smoking, were believed to be low risk by over one half of the subjects.

Of particular concern is that over two thirds of the youngest age category believed that early age at onset of intercourse was a low risk behaviour. In Canada, teenagers become sexually active at a very young age. The Canada Youth and Aids Study (King, Beazley, Warren, Hankins, Robertson & Radford, 1988) found that one in four teens aged 14 years and one in two teens aged 16 years had sexual intercourse at least once. Newfoundland teens have been found to begin sexual activity at a younger age and to be more sexually active than teens in other provinces (Beazley et al., 1988). This gives support to the recommendations of Miller et al. (1991) that screening for cancer of the cervix be incorporated into the sex education and health promotion programs for both male and female adolescents. The Federal, Provincial, Territorial Working Group on Women's Health (1990) also supports the development of health promotion and disease prevention programs as a means of improving the health and well being of women.

Knowledge of risk factors for cancer of the cervix was generally low in this investigation. It can be concluded that knowledge of risk factors does not influence screening.

Cues to action. Generally women believed their physician had the greatest influence on them to have a pap smear done. The influence of the physician is supported in

the literature (Schapira et al., 1993; Turnbull, 1978; Valentine, 1986). The physician is well respected and seen as a credible source by the public and is therefore in a prime position to assist individuals to modify behaviours that put them at risk.

Two thirds of the subjects stated that the doctor should remind them to have a pap smear done and over half of the women reported their doctor actually did remind them. Yet the majority of the subjects (87%) indicated it was their own responsibility to remember when to have a pap smear done. This is contradictory, in that while the majority feel the responsibility for screening should be their own, many feel the physician has the responsibility to remind them when a pap smear is due. Battista (1983) reporting a representative survey of primary care physicians in Quebec found that 64% of the doctors believed it was a woman's own responsibility to have a pap smear completed according to recommended screening intervals. The fact that 43% of the women indicated their physician did not remind them to have their pap smear has implications for educating women who leave the reminding up to the physician, that they should ask to have a pap smear done.

A comparison of the sample by time of last pap smear showed there was a difference between the groups on whether the physician reminded the woman to have a pap smear. Two thirds of those who had a pap smear less than one year ago



were reminded by their physician as compared to one third of those screened one or more years ago. This may reflect Health and Welfare Canada's (1988) statement that screening may be physician influenced rather than initiated by individual women. In addition, this reflects The Workshop Report (1991) that women of childbearing age are the group which physicians are more likely to take the opportunity to do a pap smear. This may indicate the need for physicians and other health care professionals to take a more active role in educating women of the importance of self care and self responsibility to remind the physician when their pap smear is due to be done. This is further supported by the comments some women made in this investigation to open ended questions that their education and personal health concerns motivated them to have a pap smear.

The subjects stated that the media had a high influence on women to have a pap smear and this influence was second to that of the doctor. The influence for the media may be high for this sample population which was comprised of generally young and well educated women. Buehler (1983) following a province wide pap test campaign concluded that women who responded to their media campaign were highly motivated, screened women. However, the literature indicates that mass media strategies are unsuccessful in reaching high risk women (Buehler, 1983; Valentine, 1986) or for changing undesirable behaviour (Epp, 1986). The effect

of the media on all women especially those at risk therefore, may not be as great as the women in this investigation perceived it to be.

Likelihood of Action. All the women in this investigation perceived the benefits to having a pap smear to be high. The influence of perceived benefits was far greater than the total influence of all nine identified perceived barriers.

Perceived benefits. Generally the subjects had high total perceived benefits scores. Almost all the women believed that having a pap smear would give them a sense of relief to find nothing wrong and that changes would be found at an early stage. These findings are similar to Hill et al. (1985) but greater than those reported by Elkind et al. (1988). The degree of influence perceived benefits had on these subjects to have a pap smear was not determined in this investigation.

Perceived barriers. According to the HBM, individuals weigh the benefits and the barriers of a particular health behaviour prior to taking action. If the benefits to action outweigh the barriers, it is most likely that the desired action will be taken. If however the barriers far outweigh the benefits, the individual is most likely to be affected by the negative feelings associated with the barriers and not take the desired action. Perceived barriers were found by Janz and Becker (1984) to be highly significant in predicting health related behaviour. Given that almost all

the women in this investigation had a pap smear within recommended guidelines, it can be assumed that the items which measured barriers were not influential enough to prevent screening behaviour in this investigation.

Peters et al. (1989) found embarrassment to be the largest component of emotional barriers involving fear. This was not found in this investigation. Harlan et al. (1991) found that the groups most affected by embarrassment were the youngest (18 to 39 years) and the oldest (60 to 70 years and older). In this investigation, nine of the fifteen women who reported they would be embarrassed were younger women between 19 to 35 years. Embarrassment is reported to be associated with the gender of the physician and having a pap smear done by the family doctor (Elkind et al., 1988; O'Rourke & Jardine, 1983). This was not found in this investigation.

The barrier reported by 64% of the subjects was unpleasantness related to having a pap smear. One third of the women reported they worried until the results came back and were afraid of what might be found on the results. Other studies identified the influence of unpleasantness and fear. Hill et al. (1985) found that the influence of unpleasantness and worry about the implications of the results to be significantly correlated with screening. Peters et al. (1989) reported that fear and hate related to the pap smear were the most common emotional barriers to

screening. In this investigation, women who were screened less than one year ago tended to worry more about test results and were afraid of what might be found. Since two thirds of these women were reminded to have a pap smear by their physician, an explanation for the fear and worry may be that the women perceived something to be wrong because they had been reminded by doctor to have a pap smear.

Almost one third (31%) of the subjects reported that they often forgot to make an appointment for a pap smear. When a comparison was made between the groups by time of last pap smear, a significant difference was found. Two thirds of the women who reported their last pap smear to be one or more years ago as compared to 21% of those who reported less than one year ago, stated they often forgot to make an appointment. This may be explained by the fact that women in this investigation who reported their last pap smear was one or more years ago, were found to be less likely to be reminded by their physician to have a pap smear.

The women reported time, work pressures, and other factors prevent women from having a pap smear test completed. Support for this is found in the literature (Peters et al., 1989). Almost one half (42%) of the women whose last pap smear was one or more years ago agreed that these were barriers to having a pap smear done regularly. This group was mainly comprised of women over the age of 35

years or women past childbearing. An explanation for this could be that women of childbearing age seek care for oral contraceptives, prenatal, and postnatal care, for example. Women past childbearing seek such care less frequently as they are no longer having babies and are more focused on the upbringing and care of their children. This could be explained in that women generally put the needs of their children and family ahead of their own needs. As well, once children have reached school age, some women are more likely to return to the work force, while others may further their education either on a full time or a part time basis.

The least reported barrier to screening was fear that one's body would not be clean enough. A statistically significant difference was found when the sample was divided by time of last pap smear. Contrary to what one would think, all of these women had a pap smear was less than one year ago. Almost one half (43%) were married and between the ages of 26 to 35 years. This is in contrast to the literature review which indicated that those most affected by concerns of personal cleanliness were adolescents (Millstein et al., 1984).

On the concern score for emotional barriers, only three women indicated a high degree of overall concern related to having a pap smear done. It therefore can be concluded that the emotional factors as a whole do not affect screening practice in this population.

### The Utility of the Health Belief Model

The HBM was found to be beneficial as an organizing framework for this investigation of the factors that may influence a woman's decision to have a pap smear. The components of the model were uncomplicated and clearly defined. The theorists who developed the model were consistent in their use of definitions of the various components and in their interpretation. This facilitated the incorporation of findings from studies not using the HBM, but which had identified factors that influenced a woman's intention to have a pap smear, as well as actual screening practice, which had relevancy for this investigation.

A difficulty with the use of the model was incorporating a woman's belief that her own personal health concerns and education influenced her screening practice and that it was her own responsibility to remember when to have a pap smear. The investigator included these findings under the cues to action variables. However, it may be questioned if these are appropriately categorized under cues to action since they are not specifically addressed in the HBM's definition of cues to action. This requires further exploration to determine if the HBM adequately addresses a person's beliefs about health in general and self responsibility for health as a motivating factors.

The scope of the model has been criticised to be

illness orientated and action specific. In addition, critiques of the model have identified that various components require further development, for example perceived seriousness, a component which was not measured thoroughly in this investigation. The HBM was not used in this investigation to predict screening practice. However, despite its limitations, the HBM has significant potential in predicting health-related behaviour and has merit for further use in nursing research.

#### Summary of the Discussion of the Results

The HBM was used to interpret the findings of this investigation of the factors that may influence a woman's decision to have a pap smear. The convenience sample was comprised of mainly young well educated women and was not representative of the general population. Alternative sampling methods should be used in the future to include a broader population base, as well as women who are not screened according to recommended intervals. The majority of women were screened according to recommended intervals.

Individual perceptions were not found to influence pap smear screening. As well, the influence of the sociopsychological variables on screening practice was not determined. However, the variable reported influential by the majority of the sample (80%) was husband or boyfriend. Over two thirds of the sample reported their mother, close friends, and sister to be influential. The variable of

least influence was people one worked with.

The structural variables were not found to influence screening practice. The majority believed the recommended screening interval was annually. This finding has implications for educational programs developed in response to future approval of the new screening guidelines: every three years regardless of age or risk. The subjects were not knowledgeable of the risk factors for cancer of the cervix. Of particular concern was that over two thirds in the youngest age category believed early onset of sexual intercourse to be low risk behaviour. This is significant in view of the reported sexual practices of adolescents in this province. This has implications for the implementation of primary prevention programs for both adolescents and the general public, particularly health promotion activities which promote healthy lifestyle choices.

Cues to action, the doctor and the media, were perceived to be highly influential and this influence was greater than that reported for individuals in a woman's family and social network. The majority of the women indicated that they should be responsible for remembering to have a pap smear, yet two thirds indicated the doctor should remind them. In the absence of a provincial recall system, this finding has implications for educating women regarding self responsibility for their health care needs. The influence of the media is reported in the literature to have



much less influence than that reported by the sample.

The actual influence of benefits and barriers to screening was not determined. However, it can be concluded that the perceived benefits to having a pap smear far outweighed the perceived barriers. Almost all the sample indicated they were relieved to have a pap smear and that changes would be found early. The barrier most frequently reported by the subjects was unpleasantness associated with the pap smear.

The HBM was found to be a useful framework to guide the investigator in this investigation. It is recommended that future studies be conducted using the HBM and that revisions be made where indicated to improve the PTQ.

## CHAPTER VI

### Implications and Conclusion

The limitations of this study included a sample that was younger and more educated than the general population, and an inability to split the sample cleanly because of the response choices to time of last pap smear which overlapped with each other. The sampling method presented limitations in that it did not generate a sample of women from all the age groups. The Pap Test Questionnaire presented limitations in respect to the absence of a "not appropriate" category for certain items, inclusion of a single variable, education, as a reference for socioeconomic status. Because of these limitations, the findings of this investigation cannot be generalized beyond the sample. However, they have implications for nursing practice, nursing theory, and nursing research.

#### Nursing Practice

The findings of this investigation indicated that women are generally not knowledgeable of risk factors for cancer of the cervix and most believed the recommended screening interval for pap smear screening was annually. Women past childbearing are less likely to be reminded to have a pap smear, are most likely to forget to make an appointment, and are most affected by time pressures. In this investigation, the subjects preferred a female to do their pap smear.

Since the nurse has a major role to play in disease prevention strategies, the following are recommended for community and institution based nursing care services:

1. Prevention activities for community nurses should be developed to address the health needs of women in general. The practice of screening for cancer of the cervix should be included as a part of routine health assessments. Target groups with respect to pap smear screening should include women of all ages and in particular adolescent females and women in high risk age categories. Content relevant to screening for cancer of the cervix should include (a) the purpose of the pap smear, (b) current recommended screening intervals, (c) risk factors for cancer of the cervix (i.e., early onset of sexual activity, multiple partners, sexually transmitted diseases including HPV), and (d) healthy lifestyle behaviours that decrease one's risk for cancer of the cervix.

2. Information on cancer of the cervix should be made more accessible and readily available. This could be achieved through better dissemination of literature available from The Department of Health and The Canadian Cancer Society. Current literature should contain content relevant to provincial cervical cancer rates, the risk factors for cancer of the cervix, recommended screening intervals, and healthy life style behaviours.

3. Both community and hospital nurses should take a

more active role in the identification of women at high risk by age and sexual behaviour and encourage these women to be screened according to recommended screening intervals for cancer of the cervix. Risk assessment for cancer, such as the one developed by White (1984), should be included as a part of the nurse's initial assessment.

4. Nurses with competence in doing pap smears should take an active role in implementing screening clinics targeted especially towards older women who are often missed from screening and who are in a high risk category for invasive cancer of the cervix.

5. Nurses should lobby for the establishment of Well Women's Clinics in both hospital and community settings. With respect to screening for cancer of the cervix, many women prefer a female to do their pap smear. Nurses should therefore implement clinics and do pap smears. Since women often forget to make an appointment for a pap smear and find time pressures prevent them from going for a pap smear, nurses in Well Women's Clinics should have a recall system in place.

Regionalization of health care services under community boards has recently been implemented in Newfoundland. This restructuring of community based health care services could facilitate the implementation of Well Women's Clinics by community nurses as a means of meeting the needs of women in each regional area. Through the regional boards, nurses

would be in a prime position to (a) identify women who are at high risk by age and sexual activity, (b) encourage women to be screened, (c) educate women individually and in small groups about cancer of the cervix and healthy lifestyle behaviours, (d) complete a community needs assessment to identify regional specific needs for primary and secondary prevention activities (i. e., accessibility to health care services, perceived value of care provided by health care professionals in the area, perceived availability of appropriated health education services to meet individual and community needs, etc.), and (e) develop and implement programs to meet these needs.

#### Nursing Theory

The HBM was used to guide a descriptive, correlational investigation of factors that may influence screening practice for cancer of the cervix in women attending urban physician's clinics. The following identifies further development of the HBM in predicting and explaining screening practice for cancer of the cervix.

1. The interrelationships between the various elements of the HBM should be further developed. For example, the interrelationship between the various sociopsychological factors and individual perceptions. Further development of the influence of close friends and husbands or boyfriends on a woman's decision to have a pap smear would help determine if women are more likely to follow recommended screening

intervals if significant others are educated about cancer of the cervix and support screening practice. Also, the influence of increased knowledge on individual perceptions and subsequent intention to have a pap smear, as well as actual screening practice should be studied. This would help identify if increased knowledge negatively influences certain women from pap smear screening.

2. Some of the women in this investigation indicated that their personal health concerns and education cued them to action. In addition most of the women believed that it was their own responsibility to remember when to have a pap smear. The influence of personal health concerns on the decision to have a pap smear should be investigated further to determine if it is actually acceptable under the definition of an internal cue to action or if it cannot be categorized under the current components of the HBM. In addition, the influence of a woman's personal belief that it is her own responsibility to remember when to have a pap smear versus placing the responsibility on the doctor to cue the woman to action should be explored further. It is important to determine the importance of internal cues to action in absence of signs and symptoms of disease and in absence of reliance on a reminder from an external source.

3. Further research is needed to determine the predictive ability of the HBM on actual screening practice. Currently the model focuses on intention to act. The

literature identifies that intention to act does not always imply that the desired health-related behaviour will be taken.

#### Nursing Research

This investigation has generated the following recommendations for future nursing research:

1. The investigation should be replicated with a particular focus on women over the age of 35 years, the age group most likely to not be screened according to recommended intervals. The investigation should be replicated using a representative random sample of a particular geographical area. Areas identified by the Newfoundland Cancer Research and Treatment Foundation to have a low percentage of women screened annually, and who are appropriate for screening, could be studied. Also, comparisons could be made between those areas where the percentage of women screened is low as compared to those areas that are high. This would help identify differences on factors that influence screening practice.

2. Although the numbers of aboriginal women are small in this province, an investigation should be conducted to determine whether the needs of aboriginal women differ from the general population or other groups of women. Investigations should be conducted with the participation of such groups as (a) Labrador Inuit Association, (b) Innu Nation, (c) Native Friendship Centre, and (d) regional

nurses employed with Grenfell Regional Health Services. Native nurses working with native populations should be included in conducting such research and in the development of subsequent recommendations regarding health services to their people.

3. The needs of women identified as disadvantaged should be studied (i.e. immigrant women, social service recipients, the mentally and physically disabled, and adolescent females in detention centres). For example, physically handicapped women or women with physically disabling chronic diseases such as arthritis, should be asked about the sensitivity of health care providers to meeting their comfort needs during the pap test, especially positioning in stirrups. This investigation could be conducted through The Hub, Canadian Mental Health Association, Association of New Canadians, for example. Identification of difficulties with the mechanics of having a pap test for mentally and physically disabled women, would result in the use of a more appropriate method of testing that promotes physical and psychological comfort. Identification of the needs of immigrant women should result in a more culturally sensitive approach to pap smear testing.

#### Conclusion

A nursing investigation of factors that may influence regular pap smear screening was conducted in two physicians'



clinics in the St. John's and Metropolitan area. Ninety-two women comprised the sample. The Health Belief Model was used to guide this investigation. While the limitations of this investigation warrant consideration, there are several important implications for nursing practice, theory, and research. Replication of this study is warranted for various subsets of the Newfoundland population including women past childbearing, women considered to be disadvantaged, and aboriginal peoples.

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Appendix A

The Workshop Group: Revised Guidelines  
for Screening for Cancer of the Cervix

The following are the recommended changes to the 1982 Task Force guidelines (Miller et al., 1991). These recommended changes have not yet been adopted for implementation in Canada.

1. All women who are age 18 and over and who have had sexual intercourse should be encouraged to enter a screening programme for cancer of the cervix.
2. Once the initial smear has been taken, a second smear should be taken one year later, especially for women who begin screening after the age of 20.
3. If the first two smears are satisfactory, women should have a pap smear done every three years up to the age of 69 years.
4. Women can be dropped from screening at age 60 years provided they have never had a diagnosis of CIN or CIS, and providing the last two pap smear results taken within the last six years are negative.

5. Women age 69 years or older who enter the screening program for the first time, can be dropped from screening following two negative smears within six months of each other.
6. When changes are detected on the cervix, the frequency of repeat examinations is determined by the need for surveillance, diagnosis, treatment, and follow up.
7. Women who do not have to be screened are those who have never had sexual intercourse and have had a hysterectomy with total removal of the cervix for benign conditions.
8. Women who have been treated for an abnormality or an abnormality that regressed spontaneously, should be screened at annual intervals for as long as is necessary.

## Appendix B

Letter of Explanation to the Participants  
From the Investigator

March 14, 1991

You are asked to be part of a research project by filling out this questionnaire. The purpose of this questionnaire is to find out how women feel about having a "Pap Test" done.

If you agree to participate in this study, please fill out the questionnaire attached to this letter while you are waiting to see your doctor. It will take about 10 minutes to do.

Try to complete the questionnaire and return it to the receptionist, in the envelope provided, before you see your doctor.

Your answers will be kept confidential and will be grouped together with all the other answered questionnaires that are returned. Please do not put your name on the questionnaire.

If you would like to have a short report of the study when it is finished, you can write me at the address below.

Thank you. Your participation will be very valuable.

Respectfully,

Colleen Kelly R.N., B.N.

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Appendix C  
PAP TEST QUESTIONNAIRE

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Instructions

Please answer the questions below by filling  
in the blank or checking ( ) the answer.

---

1. DO YOU THINK A WOMAN YOUR AGE SHOULD HAVE A PAP TEST?

☐ yes  
☐ no  
☐ don't know

IF NO, OR DON'T KNOW, GO ON TO #3.

2. HOW OFTEN SHOULD A WOMAN YOUR AGE HAVE A PAP TEST DONE?

☐ every year  
☐ every two years  
☐ every three years  
☐ every four years  
☐ every five years  
☐ only once ever  
☐ only as often as the doctor requests  
☐ don't know  
☐ other

IF OTHER, PLEASE EXPLAIN:

---

3. DO YOU KNOW WHY WOMEN MAY BE ENCOURAGED TO HAVE A PAP  
TEST?

☐ yes  
☐ no  
☐ don't know

IF NO OR DON'T KNOW, GO ON TO # 5.



4. WHAT DO YOU UNDERSTAND THE PAP TEST IS FOR?

---

---

5. HAVE YOU EVER HAD A PAP TEST?

☐ yes  
☐ no

IF NO, GO TO # 7.

6. WHEN WAS YOUR LAST PAP TEST?

☐ less than 1 year ago  
☐ 1 - 2 years ago  
☐ 2 - 3 years ago  
☐ 3 - 4 years ago  
☐ more than 4 years ago  
☐ can't remember

GO TO # 8.

7. WHAT WOULD YOU SAY ARE THE MAIN REASONS FOR YOU NOT HAVING A PAP TEST DONE?

---

---

8. CIRCLE THE NUMBER YOU BELIEVE DESCRIBES THE DEGREE OF RISK THE FOLLOWING MAY HAVE FOR DEVELOPING CANCER OF THE CERVIX.

1 means low risk  
 2 means moderately low risk  
 3 means uncertain  
 4 means slightly high risk  
 5 means high risk

- a) having sexual intercourse at age 19 or younger      low 1 2 3 4 5 high
- b) having sexual intercourse with more than three male partners      low 1 2 3 4 5 high
- c) male partner who had sexual intercourse with 3 or more women      low 1 2 3 4 5 high
- d) genital warts      low 1 2 3 4 5 high
- e) genital infections      low 1 2 3 4 5 high
- f) smoking      low 1 2 3 4 5 high
- g) taking estrogen      low 1 2 3 4 5 high

9. DOES THE IMPORTANCE OF HAVING A PAP TEST INCREASE IF A WOMAN HAS SEXUAL INTERCOURSE WITH THREE OR MORE MEN?

\_\_\_\_\_ yes  
 \_\_\_\_\_ no  
 \_\_\_\_\_ don't know

10. CIRCLE THE NUMBER YOU BELIEVE BEST DESCRIBES THE DEGREE OF INFLUENCE THE FOLLOWING MAY HAVE ON YOU TO HAVE A PAP TEST DONE.

1	means	some influence
2	means	moderate influence
3	means	no influence
4	means	much influence
5	means	a great deal of influence

- |                             |      |   |   |   |   |   |              |
|-----------------------------|------|---|---|---|---|---|--------------|
| a) close friends            | some | 1 | 2 | 3 | 4 | 5 | a great deal |
| b) husband or<br>boy friend | some | 1 | 2 | 3 | 4 | 5 | a great deal |
| c) mother                   | some | 1 | 2 | 3 | 4 | 5 | a great deal |
| d) sister                   | some | 1 | 2 | 3 | 4 | 5 | a great deal |
| e) people I<br>work with    | some | 1 | 2 | 3 | 4 | 5 | a great deal |
| f) my doctor                | some | 1 | 2 | 3 | 4 | 5 | a great deal |
| g) the media                | some | 1 | 2 | 3 | 4 | 5 | a great deal |

11. ARE THERE OTHERS NOT LISTED IN # 10 THAT MAY INFLUENCE YOU TO HAVE A PAP TEST?

☐ yes  
☐ no

IF YES, PLEASE EXPLAIN

---

12. CIRCLE THE NUMBER THAT BEST DESCRIBES WHAT YOU BELIEVE ABOUT THE STATEMENTS THAT FOLLOW.

- |   |       |                   |
|---|-------|-------------------|
| 1 | means | disagree          |
| 2 | means | slightly disagree |
| 3 | means | uncertain         |
| 4 | means | slightly agree    |
| 5 | means | agree             |

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| a) Having a pap test done would give me a sense of relief to find nothing wrong.                 | 1 | 2 | 3 | 4 | 5 |
| b) Having a pap test regularly would mean any abnormal changes will be found at an early stage.  | 1 | 2 | 3 | 4 | 5 |
| c) Having a pap test done would cause me to worry until the results come back.                   | 1 | 2 | 3 | 4 | 5 |
| d) My doctor should always ask me to have a pap test done.                                       | 1 | 2 | 3 | 4 | 5 |
| e) I am afraid to have a pap test done because I don't know what to expect.                      | 1 | 2 | 3 | 4 | 5 |
| f) I am afraid of what might be found on the test results.                                       | 1 | 2 | 3 | 4 | 5 |
| g) The pap test is important for a woman my age to have.   | 1 | 2 | 3 | 4 | 5 |
| h) I prefer for a woman to do my pap test.   | 1 | 2 | 3 | 4 | 5 |
| i) Time pressures, my work schedule and other time factors prevent me from going for a pap test. | 1 | 2 | 3 | 4 | 5 |
| j) I would be embarrassed to have a pap test.  | 1 | 2 | 3 | 4 | 5 |
| k) I often forget to make an appointment for the pap test.                                       | 1 | 2 | 3 | 4 | 5 |
| l) I am afraid my body would not be clean enough.  | 1 | 2 | 3 | 4 | 5 |

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| m) It is difficult finding a baby sitter so I can go for my pap test.                           | 1 | 2 | 3 | 4 | 5 |
| n) The pap test is unpleasant.  | 1 | 2 | 3 | 4 | 5 |
| o) I do not know who to go to for the test.   | 1 | 2 | 3 | 4 | 5 |
| p) It's my responsibility to know when to have my pap test done.                                | 1 | 2 | 3 | 4 | 5 |
| q) I am at risk for developing changes on my cervix.  | 1 | 2 | 3 | 4 | 5 |
| r) I am at risk for developing cancer of the cervix.  | 1 | 2 | 3 | 4 | 5 |
| s) There is not much point having a pap test done because I do not get the results back anyway. | 1 | 2 | 3 | 4 | 5 |

13. DO YOU HAVE A FAMILY DOCTOR?

☐ yes  
☐ no

IF NO, GO TO # 17.

14. IS YOUR FAMILY DOCTOR MALE OR FEMALE?

☐ male  
☐ female

15. DO YOU GO TO YOUR FAMILY DOCTOR FOR YOUR PAP TEST?

☐ yes  
☐ no

IF NO, WHO DO YOU GO TO? \_\_\_\_\_

PLEASE EXPLAIN WHY: \_\_\_\_\_

16. DOES YOUR DOCTOR REMIND YOU WHEN YOU NEED A PAP TEST?

☐ yes  
☐ no

17. HOW MANY CHILDREN HAVE YOU GIVEN BIRTH TO?

\_\_\_\_\_ children

18. WHAT IS YOUR AGE?

\_\_\_\_\_ 19-25 years of age  
\_\_\_\_\_ 26-35 years of age  
\_\_\_\_\_ 36-45 years of age  
\_\_\_\_\_ 46-55 years of age  
\_\_\_\_\_ 56-65 years of age  
\_\_\_\_\_ over 65 years of age

19. WHAT IS YOUR MARITAL STATUS?

\_\_\_\_\_ single/never married  
\_\_\_\_\_ married/common law relationship  
\_\_\_\_\_ separated/divorced  
\_\_\_\_\_ widowed

20. WHAT IS THE HIGHEST LEVEL OF EDUCATION THAT YOU HAVE?

\_\_\_\_\_ elementary school  
\_\_\_\_\_ some high school  
\_\_\_\_\_ completed high school  
\_\_\_\_\_ some college or trade school  
\_\_\_\_\_ completed college or trade school  
\_\_\_\_\_ some university  
\_\_\_\_\_ completed university  
\_\_\_\_\_ other education or training

21. WERE YOU ABLE TO COMPLETE THE QUESTIONNAIRE BEFORE YOUR APPOINTMENT WITH THE DOCTOR?

\_\_\_\_\_ yes  
\_\_\_\_\_ no

22. DID THE SUBJECT OF THE QUESTIONNAIRE OR THE PAP TEST COME UP DURING YOUR APPOINTMENT TIME WITH YOUR DOCTOR?

\_\_\_\_\_ yes  
\_\_\_\_\_ no

23. DO YOU HAVE ANY COMMENTS YOU WOULD LIKE TO MAKE?

---

THANK YOU, PLEASE RETURN QUESTIONNAIRE TO THE RECEPTIONIST.



Appendix D

Director: David Hill PhD.

162

26 February, 1990

Ms C Kelly  
33A Grieve Street  
St John's, Newfoundland  
Canada A1E 3W2

Dear Ms Kelly

Thank you for your letter of January 6 concerning the questionnaire used in our research on *Factors Predisposing Women to Precautions Against Breast and Cervix Cancer*.

I have pleasure in enclosing a copy of the questionnaire used. You are very welcome use this instrument and, of course, there would be no charge. In return, perhaps you would be kind enough to send me a copy of any reports consequent on the use of the measures we developed.

With best wishes for your thesis.

Yours sincerely

David Hill  
Director

DHma/1  
CC12f

Enc





Appendix E

The University of Texas  
Health Science Center at San Antonio  
7703 Floyd Curl Drive  
San Antonio, Texas 78284-7879

Department of Medicine

Division of General Medicine 164  
(512) 270-3941

June 18, 1990

Ms. Collen McKelly  
33A Griene St.  
St. John's, Newfoundland  
Canada A1E3W2

Dear Ms. McKelly:

Enclosed you will find the complete questionnaire that you requested. Should any part or all of it be of use to you please feel free to use it with appropriate footnotes. I hope that my delay in sending this has not caused you too much inconvenience. Best wishes on your thesis.

Sincerely,

Nancy J. Sugarok, R.N., M.S.N.  
Clinical Nurse Specialist  
Division of General Medicine  
Department of Medicine

NS/jb



## Appendix F

Method to Calculate  
Score for Knowledge of Risk Factors  
For Cancer of the Cervix

a) having sexual intercourse at age 19 or younger	low	<span style="border: 1px solid black; padding: 0 5px;">1</span>	2	3	4	5	high
b) having sexual intercourse with more than three male partners	low	<span style="border: 1px solid black; padding: 0 5px;">1</span>	2	3	4	5	high
c) male partner who had sexual intercourse with 3 or more women	low	<span style="border: 1px solid black; padding: 0 5px;">1</span>	2	3	4	5	high
d) genital warts	low	1	2	3	<span style="border: 1px solid black; padding: 0 5px;">4</span>	5	high
e) genital infections	low	<span style="border: 1px solid black; padding: 0 5px;">1</span>	2	3	4	5	high
f) smoking	low	1	2	3	4	<span style="border: 1px solid black; padding: 0 5px;">5</span>	high
g) taking estrogen	low	1	<span style="border: 1px solid black; padding: 0 5px;">2</span>	3	4	5	high

$$1. \quad \text{Score} = \frac{1 + 1 + 1 + 4 + 1 + 5 + 2}{7} = 2$$

2. The scores are then collapsed from a five point scale to a three point scale as follows:

Scores of 1 and 2 = 1 (1 indicates a low level of knowledge)

Scores of 3 and 4 = 2 (2 indicates that the subject is uncertain)

Scores of 5 and 6 = 3 (3 indicates a high level of knowledge)

3. A score of 2 on a five point scale becomes a score of 1 when collapsed. A score of 1 means a low level of knowledge for risk factors for cancer of the cervix.

## Appendix G

Method to Calculate  
Emotional Factors Score

- a) Having a pap test done would cause me to worry until the results come back. low 1 2 3 4 5 high
- b) I am afraid to have a pap test done because I don't know what to expect. low 1 2 3 4 5 high
- c) I am afraid of what might be found on the test results. low 1 2 3 4 5 high
- d) I would be embarrassed to have a pap test. low 1 2 3 4 5 high
- e) I am afraid my body would not be clean enough. low 1 2 3 4 5 high
- f) The pap test is unpleasant. low 1 2 3 4 5 high

$$1. \quad \text{Score} = \frac{1 + 1 + 4 + 1 + 5 + 2}{6} = 2.3 = 2$$

2. The scores are then collapsed from a five point scale to a three point scale as follows:

Scores of 1 and 2 = 1 (1 indicates a low level of concern)

Scores of 3 and 4 = 2 (2 indicates that the subject is uncertain)

Scores of 5 and 6 = 3 (3 indicates a high level of concern)

3. A score of 2 on a five point scale becomes a score of 1 when collapsed. A score of 1 means a low level of concern.

Appendix H  
COMPARISON OF GROUPS FOR NORMALITY

\* indicates skewed distribution

Variables Questionnaire Item	Last Pap Smear					
	< 1 year ago			> 1 year ago		
	$\bar{x}$	median	SD	$\bar{x}$	median	SD
Perceived Susceptibility						
I am at risk for changes on the cervix	1.952	2.0	0.798	2.240	2.0	0.779
I am at risk for cancer of the cervix	1.935	2.0	0.827	2.080	2.0	0.812
Demographic Variables						
Age	2.175	2.0	0.853	2.880	3.0 *	1.716
Marital status	1.730	2.0	0.574	2.000	2.0	0.764
Education	5.730	6.0	1.628	5.400	6.0 *	1.871
Number of children	3.159 *	2.0	1.658	3.440	3.0	1.781

Variables Questionnaire Item	Last Pap Smear					
	< 1 year ago			> 1 year ago		
	$\bar{x}$	median	SD	$\bar{x}$	median	SD
Sociopsychological variables						
Close friends	1.984	2.0	0.833	2.042	2.0	0.908
Husband/boyfriend	1.917	2.0	0.889	2.167	2.5*	0.917
Mother	1.984	2.0	0.846	2.083	2.0	0.929
Sister	2.051	2.0	0.797	2.000	2.0	0.926
People I work with	1.790	2.0	0.727	1.583	1.0*	0.717
Structural: Knowledge of Risk Factors						
Having sexual intercourse at age 19 or younger	1.810	2.0*	0.877	1.720	2.0	0.792
Multiple male partners	2.365	3.0	0.848	1.920	2.0	0.812
Male partners who has had multiple partners	2.095	2.0*	0.893	1.783	2.0*	0.795
Genital warts	2.246	3.0*	0.888	1.833	2.0	0.816
Genital infections	2.274	3.0	0.833	2.200	2.0	0.707

Variables Questionnaire Item	Last Pap Smear					
	< 1 year ago			> 1 year ago		
	$\bar{x}$	median	SD	$\bar{x}$	median	SD
Structural (continued)						
Smoking	2.349	3.0 *	0.786	2.458	3.0	0.779
Estrogen	2.033	2.0	0.712	2.043	2.0	0.706
Cues to Action						
Doctor	2.667	3.0	0.718	2.560	3.0	0.768
Media	2.206	2.0	0.864	2.240	3.0	0.879
Benefits						
Having a pap test would give me a sense of relief to find nothing wrong	1.032	1.0	0.252	1.083	1.0	0.408
Having a pap test regularly would mean any abnormal changes would be found early	2.968	3.0	0.252	3.000	3.0	0.000
Barriers						
I would worry until the results came back	1.810	1.0 *	0.913	1.600	1.0 *	0.866

Variables Questionnaire Item	Last Pap Smear					
	< 1 year ago			> 1 year ago		
	$\bar{x}$	median	SD	$\bar{x}$	median	SD
Barriers (continued)						
I am afraid to have a pap test because I don't know what to expect	1.238	1.0	0.640	1.320	1.0	0.748
I am afraid of what might be found on the test results	1.762	*	0.962	1.520	*	0.872
Time pressures, my work schedule, and other factors prevent me from going for a pap test	1.286	1.0	0.682	1.840	*	0.987
I would be embarrassed to have a pap test	1.302	1.0	0.710	1.480	*	0.823
I often forget to make an appointment	1.413	1.0	0.816	2.280	*	0.980
I am afraid my body would not be clean enough	1.206	1.0	0.600	1.000	1.0	0.000
Its difficult finding a babysitter so I can go for a pap test	1.200	1.0	0.576	1.261	1.0	0.689
The pap test is unpleasant	2.397	*	0.890	2.440	*	0.821

# Appendix I

## T-test and Mann Whitney U Results

Variables Questionnaire Item	t - test t-value (p)	Mann-Whitney - u w-value (p)
Susceptibility		
I am at risk for changes on the cervix	-1.29 (.20)	
I am at risk for cancer of the cervix	-0.44 (.68)	
Sociopsychological Variables		
Close friends	-0.28 (.78)	
Husband/boyfriend		1128.0 (.25)
Mother	-0.48 (.64)	
Sister	0.24 (.81)	
People I work with		925.5 (.216)

Variables	t - test	Mann-Whitney - u
Questionnaire Item	t-value (p)	w-value (p)
Structural: Knowledge of risk factors		
Having sexual intercourse at 19 or younger	0.44 (.66)	
Multiple male partners		880.5 (.02)
Male partners who has had multiple partners	1.48 (.14)	
Genital warts		841.0 (.04)
Genital infections		1039.0 (.54)
Smoking		1116.5 (.52)
Estrogen	-0.06 (.95)	
Cues to Action		
Doctor	0.62 (.54)	
Media	-0.16 (.87)	



Variables	t - test	Mann-Whitney - u
Questionnaire Item	t-value (p)	w-value (p)
Benefits		
Having a pap test would give me a sense of relief to find nothing wrong	-1.29 (.20)	
Having a pap test regularly would mean any abnormal changes would be found early	-0.44 (.68)	
Barriers		
I would worry until the results came back		1076.5 (.73)
I am afraid to have a pap test because I don't know what to expect	-0.50 (.62)	
I am afraid of what might be found on the test results		1071.5 (.68)
Time pressures, my work schedule and other factors prevent me from going for a pap test		1339.0 (.01)
I would be embarrassed to have a pap test		1244.5 (.12)

Variables	t - test	Mann-Whitney - u
Questionnaire Item	t-value (p)	w-value (p)
Barriers (continued)		
I often forget to make an appointment		1500.0 (.001)
I am afraid my body would not be clean enough	1.65 (.10)	
It's difficult finding a baby sitter so I can go for a pap test	-0.69 (.50)	
The pap test is unpleasant		1176.5 (.54)





